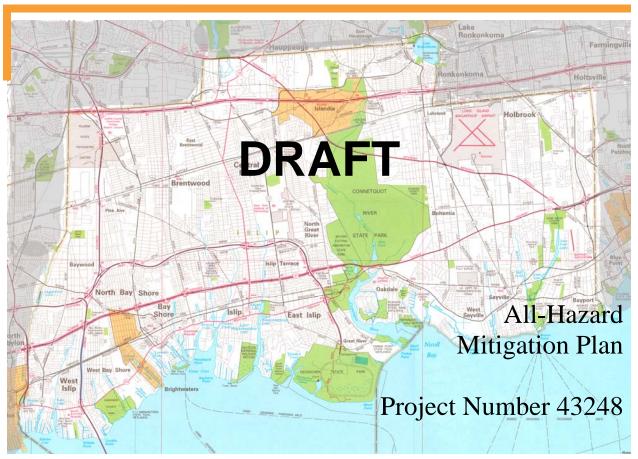
Town of Islip





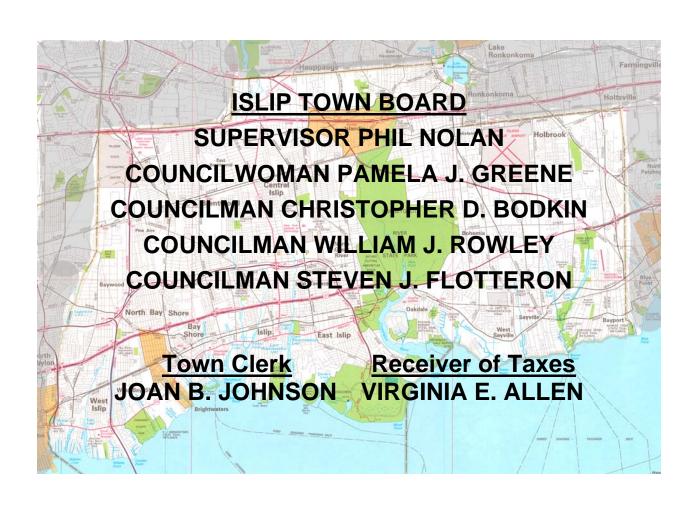
30 June, 2007 Version: Draft 1.1



Prepared by:

Sidney B. Bowne & Son, LLP

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ALL - HAZARD MITIGATION PLAN EXECUTIVE SUMMARY

I. Introduction

The purpose of the All-Hazard Mitigation Plan is plan is to identify the Town's natural and human and technological hazards, review and assess past disaster occurrences, estimate the probability of future occurrences, identify vulnerability (areas and development that could be impacted), set goals to reduce potential impacts, recommend a prioritized list of solutions to mitigate potential damage and protect the public and resources within the Town. The mitigation plan will explore mitigation opportunities; evaluate resources, needs and shortfalls. Finally, the plan will be implemented on a continual basis through outside grants, as part of the Town's regular capital and operating budgets and through programmatic and legislative actions.

The Town has experienced natural disasters such as hurricanes, nor'easters and other severe storms and floods. These disasters resulted in huge expenditures of both public and private funds, including federal and state funds, in repairing and rebuilding severely damaged facilities. Accordingly, the Town adopted a XXXXXX Plan in XXXX that is the basis of the All-Hazard Mitigation Plan.

Section 322 of the federal Disaster Mitigation Act of 2000, entitled "Mitigation Planning," is an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance Act. According to this amendment (known as the Stafford Act amendments), all local governments must have an approved All-Hazard Mitigation Plan by November 1, 2004 in order to be eligible to receive Hazard Mitigation Grant Program (HMGP) funding.

The Stafford Act amendments established a national program for pre-disaster mitigation and streamlined the administration of federal disaster relief. The interim Final Rule is detailed in the Code of Federal Regulations, specifically found at 44 CFR Part 201and 206.

The Draft Hazard Mitigation Plan dated 30 June 2007 was submitted to the New York State Emergency Management Office (SEMO) who accepted the plan and forwarded it to the Federal Emergency Management Administration (FEMA) for review and approval. FEMA approved the plan on XXXXX.

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II. Planning Process

Creation of a planning committee or team to conduct the planning process is a key element in mitigation planning. A planning committee that includes public representation ensures broad community support for the plan. To that end, the Islip Town Planning Department created a Hazard Mitigation Planning Committee comprised of representatives from Town and County government, local service providers and civic organizations. The committee was charged with drafting an action plan in order to address the requirements of the Stafford Act and related issues concerning storm, flood and other hazards. The function of the Committee was to pool resources among various Town departments and personnel and a cross section of the community to compile an All-Hazard Mitigation Plan.

The Hazard Mitigation Planning Committee was chaired by Deputy Town Supervisor, Joe DeVincent and included representatives from various Town departments including; Emergency Management, Public Works, Parks, General Services, Planning and Development, Engineering, the Town Board and Town Supervisor's office. These employees were chosen because of their key roles with mitigation planning and activities with community organizations outside of their Town employment. The Committee also included members from local hospitals, Suffolk County Police and the local utility, LIPA/Keyspan. The Committee met regularly and members were responsible for supplying information to the project consultant, Sidney B. Bowne & Son, LLP. A representative of the NY State Emergency Management Office (SEMO) was available in an advisory capacity.

The following was accomplished during the Planning Committee meetings:

- The "kickoff" meeting included a review of tasks regarding known hazards and an assignment of tasks to committee members, with a timetable for completion.
- The Planning Committee met and reviewed the NY State hazard ranking model HIRA-NY. The group determined which hazards should be considered for analysis. Each hazard was assigned a rank in accordance with HIRA-NY. The list was reviewed at two meetings to insure that the rankings were correct.
- The Committee discussed potential projects with due consideration to existing regional master plans.
- The Planning Committee reviewed a draft Hazard Mitigation Plan
- The planning process included two public comment periods, one from 18 May to 30 June 2007 and the second in XXXX. On XXXXXX, the Town Board formally adopted the plan by approval at a regularly scheduled public meeting.

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III. Risk Assessment

For the purposes of this study, hazards are classified in two general categories, natural and human and technological. The Planning Committee, with input from representatives of various agencies, identified 28 hazards that pose a realistic threat to residents of the Town. The hazards include: flood, fire, severe storm, terrorism, ice storm, oil spill, HAZMAT (in transit), utility failure, tornado, HAZMAT (fixed site), tsunami, wildfire, transportation accident, hurricane, extreme temperatures, explosion, winter storm (severe), water supply contamination, infestation, earthquake, structural collapse, ice jam, fuel shortage, drought, civil unrest, epidemic, food shortage, radiological (in transit)

The Planning Committee ranked each of the hazards identified above using a scoring system developed by the American Red Cross and New York State Emergency Management Office (SEMO) called HAZNY (Hazards New York). The scoring system uses a weighted numeric system using the following as input parameters:

- Scope
- Frequency
- Impact
- Onset
- Duration

The scope factor includes the area or areas that could be impacted by the hazard, and the possibility of the hazard triggering another hazard. The scope of the hazard may be in a single location, several individual locations, throughout a small region or throughout a large region. According to the HAZNY model, a small region is defined as a portion of the Town, or perhaps a neighborhood and a large region would apply to a hazard that could happen over a significant portion of the Town.

The frequency is an estimation of how often the hazard would occur. According to the HAZNY model, the frequency factor could be described as rare (occurring once every 50 years), infrequent (occurring between once every 8 years and once every 50 years), a regular event (occurring between once a year and once every 7 years) or frequent (occurring more than once a year).

The impact factor considers the impact on people, property and infrastructure. Impact on people would consider whether serious injury or death is unlikely, likely but not in large numbers (casualties treatable through the normal operation of emergency system), likely in large numbers (casualties require full activation of Town's medical facilities' disaster plan) or likely in extremely large numbers (casualties overwhelm the Town medical system and outside assistance is required).

The impact on property includes damage to, homes, businesses, government buildings, roads, bridges, water, sewer and power facilities, structures, belongings and income. The damages could be considered little (or none), moderate or severe.

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The onset factor is whether there is any warning time before the event. The onset could be no warning, several hours warning, one day warning, one week warning or more than one week warning.

Hazard duration includes the length of time that the hazard lasts and how long emergency operations continue. The duration could be less than one day, one day, two or three days, four days to one week or more longer than one week.

The duration of emergency operations could be less than one day, one to two days, three days to one week, one to two weeks or longer than two weeks.

Hazard Analysis

The evaluation of the 28 hazards applicable to the Town of Islip have been scored and grouped into the following categories in accordance with the HAZNY model.

321 to 400 High Hazards: (none)

241 to 320 Moderately High Hazards

Natural Hazards: flood, severe storm, ice storm.

Human and Technological Hazards: fire, terrorism.

161 to 240 Moderately Low Hazards

Natural Hazards: tornado, tsunami, wildfire, hurricane, extreme temperatures, winter storm (severe), infestation, earthquake, ice jam, and drought.

Human and Technological Hazards: oil spill, HAZMAT (in transit), utility failure, HAZMAT (fixed site), transportation accident, explosion, water supply contamination, structural collapse, fuel shortage.

Man-Made or Human-Caused Hazards: civil unrest.

44 to 160 Low Hazards

Natural Hazards: Epidemic

Human and Technological Hazards: Civil Unrest, Food Shortage, and Radiological (in transit).

The Planning Committee chose to exclude the following hazards that do not apply to the Town of Islip: avalanche, dam failure (resulting danger to people and/or property), landslide, mine collapse, radiological release from a fixed site (from nuclear power generation).

The plan includes an analysis of vulnerable assets, a discussion of past events, historical damages, probable future events, development trends and estimates of potential losses for the moderately high hazards. A general discussion of the low hazards is also included.

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IV. Mitigation Strategy

Mitigation strategy is provided for each of the moderately high hazards, including a brief discussion of goals, objectives and actions. Mitigation actions are analyzed for their cost and benefit to the community. Finally, mitigation measures that are accepted by the community will become a mitigation implementation plan.

V. Plan Maintenance

The All Hazard Mitigation plan will be reviewed at least once a year by the Town of Islip Mitigation Planning Committee that will be appointed by the Town Supervisor, after adoption of the All Hazard Mitigation Plan. This committee will hold a public meeting to all public input in monitoring, evaluating and updating the plan.

VI. Plan Adoption

After Islip All Hazard Mitigation Plan is finalized, it must be formally adopted by resolution of the Town Board and submitted through the New York State Emergency Management Office to FEMA for approval.

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TOWN OF ISLIP

ALL - HAZARD MITIGATION PLAN

I. Introduction

A. Town Profile

The Town of Islip is one of ten large suburban towns and 31 villages that encompass Suffolk County on Long Island, NY. Suffolk County is situated adjacent to and east of Nassau County, as shown on the Location Map, below.

The Town is located in western Suffolk County and is located 40 miles from mid-town Manhattan (New York City). The Town encompasses 105.2 square miles.

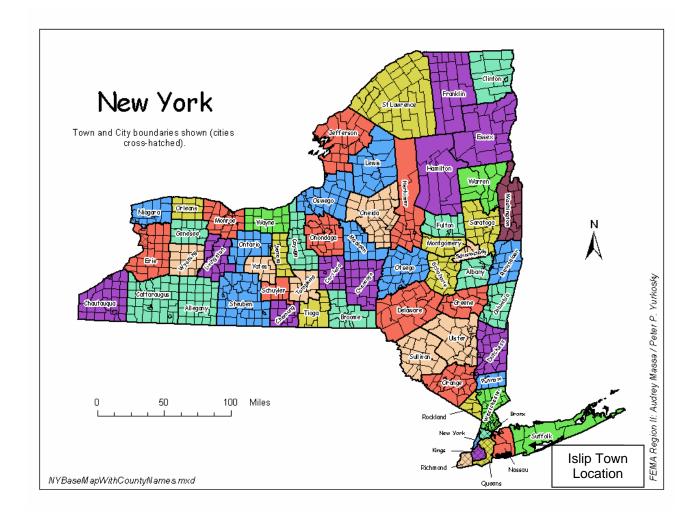
Its borders include the Town of Smithtown on the north and Great South Bay and the Atlantic Ocean on the south, the Town of Brookhaven to the east, and the Towns of Huntington and Babylon to the west.

The population of the Town, excluding the Incorporated Villages is 322,612, according to the 2000 Census. There are 4 incorporated villages within the Town, each of which is an independent municipality with its own governing body and independent land-use and regulatory powers. The incorporated villages constitute 3.6% of the land area within the Town boundary, and the remaining 96.4% of the area are the 20 unincorporated hamlets of the Town of Islip. This report has been prepared for the unincorporated portion of the Town of Islip, as shown on the Town Map.

The unincorporated Town contains nearly 102 square miles of land and 72, 210 acres or 83.42% is zoned as Residential. Over 79% of housing units are single family, detached units with 78.6% of all types of residences occupied by their owners. There are commercial properties, industrial land and recreational lands within the Town concentrated generally on the main roads and beaches, as shown on the Town Land Use Map.

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Location of Islip Town, relative to New York State and Suffolk County



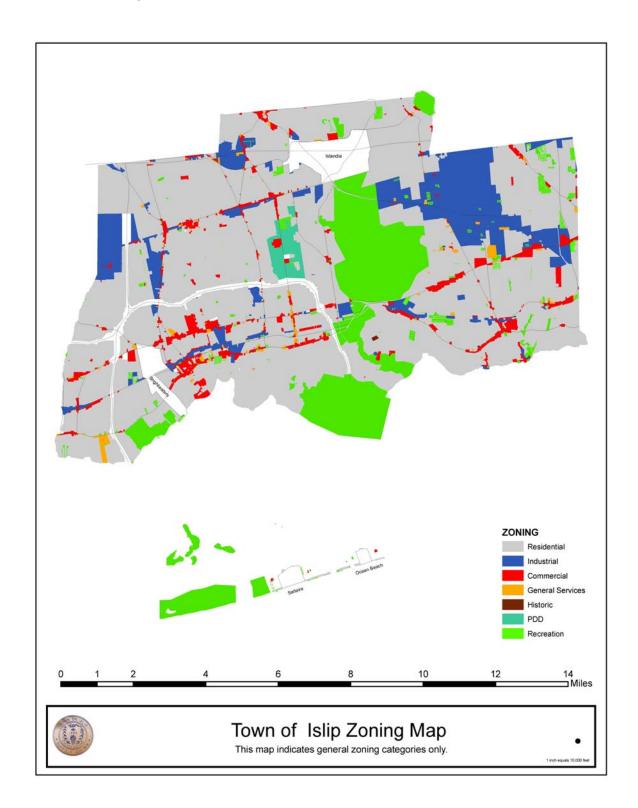
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Town Map



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Land Use Map



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Land Use Summary

Zoning Category	Acreage	% of Islip Town
Residential	72,210	83.42
Industrial	10,456	12.08%
Commercial	2,495	2.88
Other	895	1.034%
General Services	503	.58%
Historic	5.28	.006%

Recreational Areas

Designation	Number	Acreage
Parks	9	125.99
Playgrounds	10	19.70
Athletic Fields	5	40.30
Picnic Grounds	1	6.25
Golf Course (Private and Public)	8	559.75
Forested/Conservation Lands/Public Parks	3	158.76
State-owned Public Park/Recreation	26	8129.76
County-owned Public Park/Recreation	14	495.17
City/Town/Village Park & Recreation	37	220.93

Source: Islip Department of Planning and Development

The Town is governed by a five (5) member Town Board that is responsible for matters pertaining to the operation of the Town. The Town government consists of the following departments, programs and services:

- Assessor, responsible for determining the assessed value of more than 97,000 parcels within the town for purposes of taxation.
- Aviation and Transportation, responsible for operation of Long Island MacArthur Airport
- Comptroller, responsible for Town financial matters including: accounting, accounts payable, accounts receivable, audit and control, budgeting and financing.
- Planning & Development is responsible for economic development, land management, subdivisions and zoning, building and housing, engineering

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and contracts, fire prevention, Zoning Board of Appeals and the Plumbers Examining Board

- Environmental Control Department implements and manages the Town's Solid Waste stream, environmental protection, marine law enforcement, recycling, garbage collection, animal control programs and the shellfish hatchery.
- Human Services Administration provides services to the public including:
 - Drug & Alcohol Counseling (ACCESS/ACCESO), provides alcohol and drug abuse counseling and educational services to Town of Islip residents and their families.
 - Hotline provides crisis intervention, peer counseling and referrals to residents of Long Island, by trained volunteers.
 - Human Development Division offers a wide variety of Family Service programs for Islip residents.
 - Senior Citizen Services provides services for Islip's Senior Citizens 60 Years of Age and over
 - Disabled Services and Therapeutic Recreation is responsible for stimulating, promoting, encouraging, and advancing the rights of Islip's disabled residents.
 - Youth Bureau and the Islip Youth Board administer four not-for-profit agencies, which provide youth services Town wide.
 - Teen Parent Program is designed to reach out and provide a comprehensive network of supportive services and leisure activities for parents 12 to 21 years of age.
- Parks, Recreation & Cultural Affairs is responsible for park maintenance, recreation programs, cultural affairs, marina and beach maintenance and public safety
- Public Works (DPW) provides a variety of services to Islip residents including road maintenance and repair, street sweeping, installation and maintenance of street signs and pavement markings, and trimming and removal of Town owned trees.
- Receiver of Taxes is responsible for the tax roll and accounting and billing for taxes collected by the Town.
- Town Attorney is responsible for code enforcement, investigation, law enforcement and litigation.
- Town Clerk is responsible for maintaining Town records, issuing permits and licenses and the Parking Violation Bureau

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 Independent agencies consist of the Community Development Agency, Foreign trade Zone, Housing Authority, Resource recovery Agency and Industrial development Agency.

The Town Highway Division maintains approximately 1500 miles of roads. In addition, there are many county-owned and state roads maintained by their respective governments also located in the Town.

The Town Department of Parks and Recreation administers an extensive Park and Recreation system that includes over 1,400 acres of land dedicated for active and passive recreation needs of the residents. This includes nine beaches, four pools, three golf courses, seven recreation centers, 56 ball fields, 86 playgrounds, 45 tennis courts, 1,500 boat berths, a rifle and pistol range, art museum, 200-acre nature center, in regional parks, sports complexes, historical and memorial sites and marinas and launching facilities.

The Town of Islip does not have a police department, nor does it have a fire department. The Suffolk County Police Department has jurisdiction over police matters within the Town. The Town relies on 21 all-volunteer local fire departments for protection from fire.

B. Purpose

The purpose of this plan is to recognize the Town's natural and man-made hazards, estimate the probability of occurrence, identify vulnerability, determine priorities and recommend solutions to mitigate damage from the hazards to protect the public and resources within the Town. This report will explore mitigation opportunities; evaluate resources, needs and shortfalls.

The Town has experienced disasters resulting in huge expenditures of both public and private funds, including federal and state funds, in repairing and rebuilding facilities severely damaged as a result of flooding and to a lesser extent wind damage from natural disasters such as hurricanes, nor'easters and other severe storms.

Section 322 of the federal Disaster Mitigation Act of 2000, entitled "Mitigation Planning," is an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance Act. According to this amendment (known as the Stafford Act amendments), all local governments must have an approved All-Hazard Mitigation Plan in order to be eligible to receive Hazard Mitigation Grant Program (HMGP) funding. The Stafford Act amendments established a national program for pre-disaster mitigation and streamlined the administration of federal disaster relief. The interim Final Rule is found at 44 CFR Part 201 and 206.

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After responding to comments from review agencies, the Draft Hazard Mitigation Plan (date XXXX) was submitted to the New York State Emergency Management Office (SEMO) who accepted the plan and forwarded it to the Federal Emergency Management Administration (FEMA) for review and approval. FEMA approved the plan on (XXXX). The Town of Islip (Town Board) must formally adopt the final plan, which may be done at a regular Town Board meeting. The plan has considered any comments made during a series of two 40-day public comment periods.

II. Planning Process

A. Planning Committee

The Islip Town Planning Department created a Hazard Mitigation Planning Committee comprised of representatives from Town and County government, local service providers and civic organizations. The function of the Committee was to pool resources among various Town departments and personnel and a cross section of the community to compile an All-Hazard Mitigation Plan which would comply with the requirements of the Stafford Act.

The Hazard Mitigation Planning Committee was chaired by Deputy Town Supervisor, Joe DeVincent and included representatives from various Town departments including; Emergency Management, Public Works, Parks, General Services, Planning and Development, Engineering, the Town Board and Town Supervisor's office. These employees were chosen because of their key roles with mitigation planning and activities with community organizations outside of their Town employment. The Committee also included members from local hospitals, Suffolk County Police and the local utility, LIPA/Keyspan.. The Committee met regularly and members were responsible for supplying information to the project consultant, Sidney B. Bowne & Son, LLP (SBB). The project manager from SBB is a certified and professional planner and professional engineer. A representative of the NY State Emergency Management Office (SEMO) was available in an advisory capacity.

Individual members of the committee were as follows:

Steven Perrotta Islip Planning Department

William Pfaffe Islip Town Attorney

Judy Lambiase Islip Department of Emergency Management

Rick Gimbl Islip Emergency Manager

Al Sanchez Islip Department of Environmental Control

Gregory Clifton Islip Department of Code Enforcement

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Peter W. Kletchka Islip Department of Public Works

Robert Sgroi Islip Town Harbor Police

Thomas Conroy Islip Town Harbor Police

Lee Gillette Islip Department of Aviation and Transportation

David Janover Islip Division of Engineering

Hope Larson Islip Building Division

Kenneth Weeks Islip Building Division

Joe Badala LIMA- Fire Rescue

Mike Delgado HAZ-Mat Coordinator

SGT. Joseph King Suffolk County Police Department

Frank Saladino Suffolk County Police Department

Thomas O'Hara Suffolk County

Bob Sheron Suffolk County FRES

Doug Schearer Keyspan

Al Guardino LIPA/Keyspan

Anthony Pelllicone Southside Hospital

Tom Miranda Good Samaritan Hospital

Gerard Stoddard Fire Island Association

James Antonelli, P.E. Bowne AE&T Group

Carole Neidich-Ryder, M.S. Bowne AE&T Group

The Planning Committee met on: 10/02/06, 01/18/07, 03/13/07, 04/12/07 and 6/6/07 and 6/27/07.

The meetings on 10/02/06 and 01/18/07 were general orientation meetings and discussions about the plan.

The meeting on 03/13/07 was a review and discussion on hazards.

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The meeting on 04/12/07 was a discussion on mitigation.

The meetings on 06/6/07 and 6/27/07 were to review the draft mitigation plan and perform a STAPLEE analysis.

B. <u>The preparation of the All Hazard Mitigation Plan included a review and incorporation of the following Regional Master Plans:</u>

- 1. Town of Islip Emergency Management All Hazards Emergency Plan- 2007 (draft).
- 2. L.I. MacArthur Airport On-Site Aircraft Incident Mutual Aid Response Plan (09/12/03).
- Town of Islip Hazardous Materials Response Team Standard Operating Guidelines.
- 4. Department of Environmental Control Emergency Preparedness Site Summary- 2006
- 5. Town of Islip Debris Management Plan
- 6. Report: Critical Areas in Case of Power Failure (draft)
- 7. Suffolk County High Potential Loss Facilities and Transportation Features (draft 2007)

C. Coordination With Regional and Local Agencies

In an effort to obtain as much information as possible, such as technical information on risk assessment, vulnerability and various mitigation measures, guidance on regulatory requirements, advice and assistance in the planning effort, the following agencies were contacted and invited to participate in the planning process:

New York State Emergency Management Office

New York State Police

New York State Department of Transportation

Suffolk County Police

Suffolk County Fire Rescue & Emergency Services

Town Hospitals and Nursing Homes

Town Fire Districts

Local civic advisory groups

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LIPA/ KEYSPAN

D. <u>Public Participation</u>

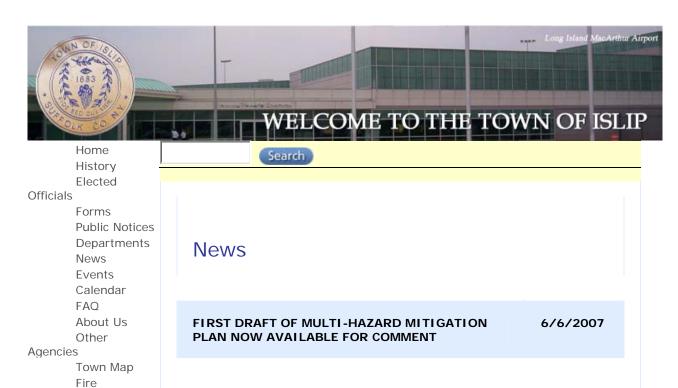
Besides the solicitation of information and direct participation from the agencies listed above, from 18 May to 30 June 2007, the Draft Plan was made available for review at all public libraries located in the Town and the Executive Summary was sent to civic associations. It was also posted on the Town website and available for public inspection at Town Hall, Islip, NY, with an invitation for public comment.

A public hearing for the Draft Plan was held at Islip Town Hall on 7 June 2007.

A second 40-day public comment period was opened on XXXX, affording the public an opportunity to express any comments. It should also be noted that local civic group representatives attended each of the Planning Committee meetings.

On XXXX, the Town Board formally adopted the plan by approval at a regularly scheduled public meeting.

Town of Islip webpage soliciting public comment:



The first draft of the Town of Islip Multi-Hazard Mitigation Plan is available for public review and comment. Download a PDF version of this plan by clicking **HERE**. Paper copies of this plan are available at libraries within the Town. Comments may be made via email to commissioner-pd@townofislip-ny.gov or in person at the June 7th, 2007 Planning Board hearing. This hearing will begin at 7:30PM at Town Hall 655 Main Street, Islip 11751. If emailing comments, please write "Hazard Plan" in the subject box. Thanks for your input and if you have any questions, please contact the Planning Department at 631-224-5450.

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III. Risk Assessment and Hazard Analysis

The Planning Group analyzed all hazards potentially affecting Town of Islip. Using the *HIRA-NY* program, each hazard was ranked, based on the Group's assessment and assigned a numerical value.

Background

On 2 April 2007, the Town of Islip conducted a hazard analysis using the automated program, *HIRA-NY* (Hazard Identification and Risk Assessment New York) developed by the American Red Cross and the New York State Emergency Management Office (NYSEMO). This Hazard Analysis document is a key component in the process of creating a multi-hazard plan and will constitute a major section of your Multi-Hazard Mitigation Plan document; it forms the basis for our risk and vulnerability assessment. The results of this hazard analysis are presented in this report.

HIRA-NY evaluates five factors that are the cornerstones in the hazard analysis process. In considering these factors, it is also expected that the risk assessment components of the all-hazard mitigation planning process as outlined in 44 CFR Part 201, under which the hazard mitigation plan is being developed, will also be developed. The risk assessment process is required to identify all hazards that can impact a community and the profiling of the most prevalent hazards. Profiling hazard involves consideration of a) location, or geographic areas affected; b) extent or magnitude/severity; c) previous occurrences; and, d) probability of future occurrences. These five factors are:

- 1. Scope This factor looks at two aspects: (1) What area or areas in your jurisdiction could be impacted by the hazard location and (2) What are the chances of the hazard triggering another hazard causing a cascade effect?
- 2. Onset How much time is there between the initial recognition of an approaching hazard and when the hazard begins to impact the community? This is a very important factor because for some hazards (e.g., drought) ample warning time is available so that if plans and procedures have not been developed, there is still time to accomplish such. On the other hand, an earth quake could occur at any time without a warning and cause severe damage.
- 3. Impact This factor involves the analysis of a hazard's impact extent to the community's infrastructure, private property, and people.
- 4. Duration (also an indicator of extent) This factor is concerned with three durations: (1) How long does the hazard remain active? (2) How long do emergency operations continue after the hazard event? (3) How long does the recovery process take?

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5. Frequency (past occurrences) - This factor indicates how often a hazard has resulted in an emergency or disaster; historical frequency can also be a prediction of how often a hazard will occur in the future (probability of future occurrences). Frequency is established by recording historical events and determining time intervals between each occurrence.

HIRA-NY and the Town of Islip

HIRA-NY is an automated interactive spreadsheet that asks specific questions on potential hazards in a community and records and evaluates the responses to these questions. The selections made in HIRA-NY are based on information entered into preformatted Microsoft Excel worksheets recommended by FEMA and NYSEMO. HIRA-NY also includes historical and expert data on selected hazards. HIRA-NY is designed specifically for groups, rather than individual use. Town of Islip assembled a group of local officials to consider and discuss the questions and issues raised by the HIRA-NY program. Representatives from (Enter what agency facilitated the workshop) facilitated the meeting and recorded the results.

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The Results

The Group analyzed all hazards potentially affecting the Town of Islip. *HIRA-NY* rated each hazard based on the Group's assessment and assigned a numerical value.

These values are categorized as follows:

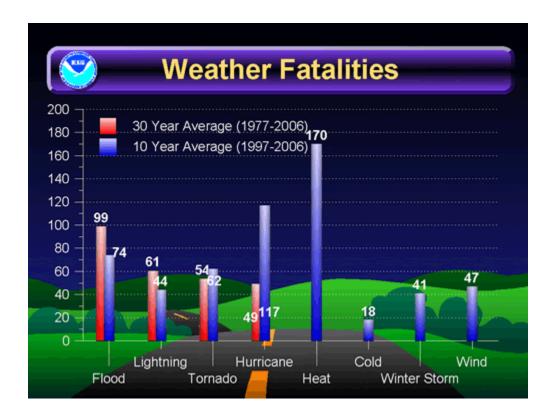
321 to 400 HIGH HAZARD 241 to 320 MODERATELY HIGH HAZARD 161 to 240 MODERATELY LOW HAZARD 44 to 160 LOW HAZARD

The Group rated the 28 hazards as follows:

Hazard	Rating
FLOOD	300
FIRE	270
SEVERE STORM	252
TERRORISM	252
ICE STORM	245
OIL SPILL	240
HAZMAT (IN TRANSIT)	230
UTILITY FAILURE	228
TORNADO	227
HAZMAT (FIXED SITE)	223
TSUNAMI	221
WILDFIRE	221
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Natural Hazards rated as moderately high: FLOOD, SEVERE STORM, and ICE STORM



The U.S. Natural Hazard Statistics provide statistical information on fatalities, injuries and damages caused by weather related hazards. These statistics are compiled by the Office of Services and the National Climatic Data Center from information contained in *Storm Data*, a report comprising data from NWS forecast offices in the 50 states, Puerto Rico, Guam and the Virgin Islands.

Source: http://www.nws.noaa.gov/om/hazstats.shtml

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FLOOD: 300, Moderately High Hazard

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely.

Dam Failure (erosion around weirs); Landslide (erosion and slumping of land including banks of freshwater and marine systems including beach erosion); Transportation Accident (traffic accidents); Utility Failure (power outages); Water Supply Contamination (possible inundation of water supply

facilities and infrastructure).

Frequency:A Frequent EventOnset:One Day WarningHazard Duration:Two to Three Days

Recovery Time: Three Days to One Week

Impact:

Serious Injury or Death Unlikely

Severe Damage to Private Property

Severe Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> Risk was estimated from N.Y.S. Coastal Erosion Task Force Documents, Sea, Lake, and Overland Surge for Hurricanes model (SLOSH) Maps, newspaper articles and records of storms from the National Climatic Data Center (NOAA). The flooding risk from hurricanes will be discussed in this section as part of the risk from the flooding hazard.

A possibility of coastal erosion exists when flooding in a coastal area is due to wind and wave action. Coastal erosion can cause or exacerbate flooding conditions and is extremely dangerous to infrastructure on barrier islands such as Fire Island and along the shore of Great South Bay. It can also lead to a breach in Fire Island which could have major impacts on Great South Bay and the south shore of Islip Town.

<u>Hazard Description:</u> According to FEMA, the simple definition of a flood is an excess of water on land that is normally dry. The National Flood Insurance Program includes in their definition inland tidal waters; unusual and rapid accumulation or runoff of surface waters from any source; collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood.

Causes of flooding in Islip Town are due to extreme tidal cycles, hurricanes, Nor'easters and rain due to severe storm events. According to the Town Engineering Division, basement flooding is an ongoing problem in two areas of Islip Town, Bishop's Lane in Holbrook and Lake Hills, Ronkonkoma. This flooding is thought to be a result of an increase in the elevation of groundwater levels and is affecting approximately 50 homes.

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Long Island is subject to classic storms called Nor'easters that that affect the Mid-Atlantic Coast north to New England and may cause flooding. These events are most frequent and violent between September and April. They form as an extratropical cyclone (low pressure center) that develops outside of the Tropics, near the Atlantic Coast of North America. As it moves northward, the counterclockwise circulation around the low pressure area causes winds to blow across Long Island from the northeast, pulling in moisture and strength from the Atlantic Ocean. The wind field of a northeaster is generally less symmetrical than in a hurricane, covers a greater area, and has a slower forward motion.

Thus, while the intensity of a northeaster is generally less than that of a severe hurricane, its period of activity tends to be longer. Due to the slower movement of the storm, greater amounts of precipitation are common, compared to other storms. The prolonged periods of onshore winds may result in longer periods of tidal flooding from Great South Bay, coastal flooding on the ocean front along Fire Island, severe beach erosion and flooding of inland areas. In the winter snow and wind from a Nor'easter may combine to produce blizzard conditions and heavy snowfall.

<u>Geographic Location/Area(s) Affected:</u> Coastal flooding within the Town occurs mainly immediately adjacent to Great South Bay and the Barrier Beach areas. Inland flooding may occur in low-lying areas near streams, rivers and roadways or areas that become clogged with debris or are inadequate to handle water from severe rain events.

Land areas that are at high risk for flooding are called Special Flood Hazard Areas (SFHAs), or floodplains. The floodplains throughout the Town have been identified through the use of Flood Insurance Rate Map (FIRM) studies. Each zone reflects the severity or type of flooding in the area. A home located within an SFHA has a 26 percent chance of suffering flood damage during the term of a 30-year mortgage. Special Flood Hazard Areas inundated by storm tide with added wave effects have also been mapped as "V" categories. According to a letter received by Islip Town on 21 June 2007, from the Fire Island Association, Gerard Stoddard, President wrote that, "flooding from the bay side is increasingly common and of growing concern". Therefore for Fire Island flooding from Great South Bay as well as the Atlantic Ocean is a concern.

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The FIRM designates two types of floodplain: A-Zone and V-Zone. The A-Zone is determined by the 100-year stillwater with added wave heights of *less* than 3 feet. The V-Zone is determined by the 100-year stillwater with added wave heights of *more* than 3 feet and is most dangerous. FEMA flood zones that are defined as follows:

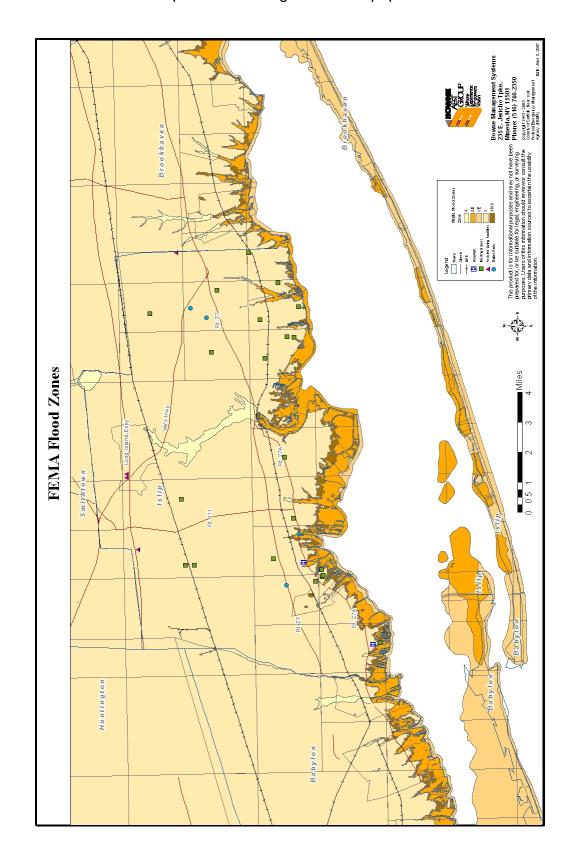
Zones B, C, and X	Areas with less than a 1% chance of flooding each year; areas that have less than a 1% chance of sheet flow flooding with an average depth of less than 1 foot; areas that have less than a 1% chance of stream flooding where the contributing drainage area is less than 1 square mile; or areas protected from floods by levees. No base flood elevations or depths are shown within these zones.
ZONE A	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones.
Zone AE and A1-A30	Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. In most instances, base flood elevations derived from detailed analyses are shown at selected intervals within these zones.
Zone AH	Zone AH is the flood insurance rate zone that corresponds to the areas of 100-year shallow flooding with a constant water- surface elevation (usually areas of ponding) where average depths are between 1 and 3 feet.
ZONE AO	River or stream flood hazard areas and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones.
Zone V	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.
Zone VE and V1 - 30	Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. No base flood elevations are shown within these zones.

Source:

http://www.floodsmart.gov/floodsmart/pages/riskassesment/floodzonesdefined.jsp

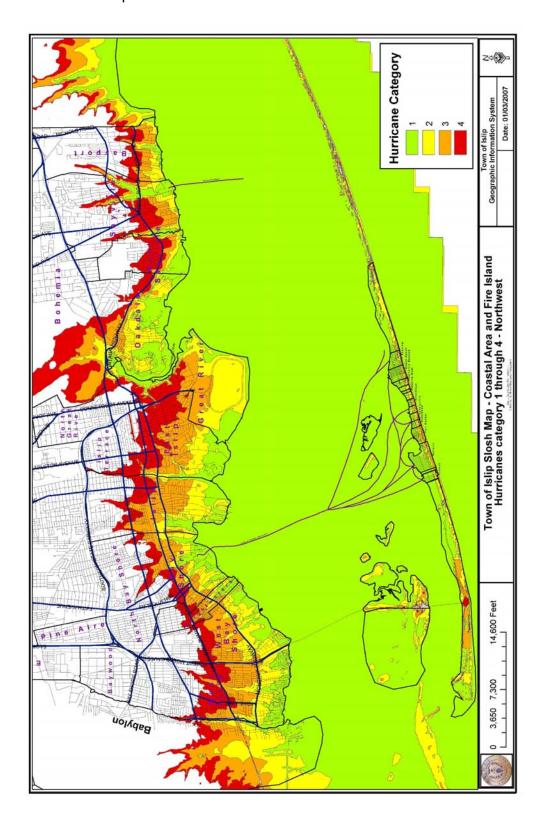
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Map of FEMA Flood Zones Islip Town showing vulnerable populations.



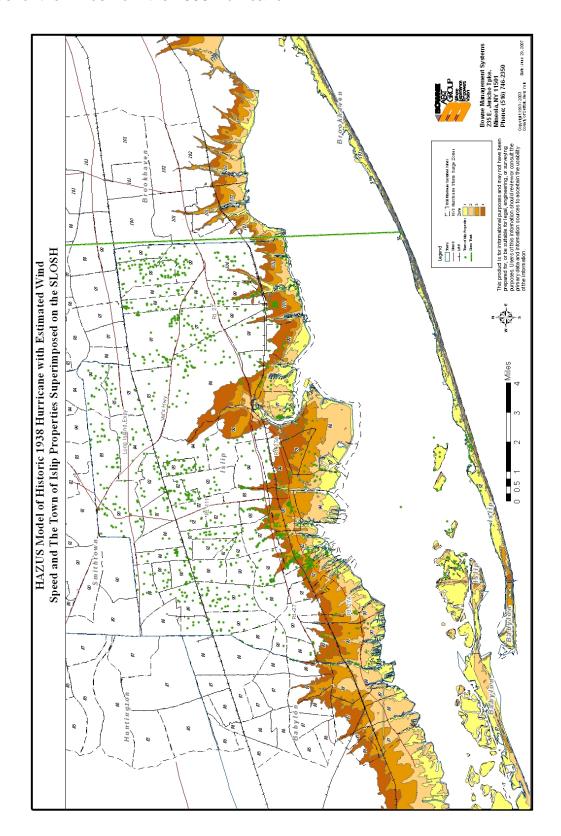
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A SLOSH map identifies additional areas that may be flooded during hurricane events Islip Town SLOSH Map.



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Islip-owned facilities and properties superimposed on the SLOSH Map and HAZUS model of the winds from the 1938 Hurricane.



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Some areas scattered throughout the Town of Islip outside the Special Flood Hazard Area are subject to localized and temporary flooding problems due to torrential rain events. The problem is generally caused by drainage systems that are either clogged with debris or simply inadequate to handle the volume of water from severe rain events. Some problems are very minor such as ponding, others are severe. Maintenance of drainage is key to prevention of flooding in these areas.

Extent (magnitude or severity) of Hazard: Flooding exists in populated areas of the barrier island on Fire Island, in low-lying coastal areas along Great South Bay and in areas near streams and rivers. Cascading Effects: Flooding may lead to Dam Failure (weirs); Landslide; Trans Accident; Utility Failure; Water Supply Contamination. In addition to the above, debris accumulating from destruction of natural and man made materials may become a hazard and economic burden due to floods.

<u>Historical Description of Previous Occurrences:</u> Flood events in the Town of Islip include coastal flooding and inland flooding. Coastal flooding may result from extremes in tidal fluctuation or hurricanes and extratropical storms, including Nor'easters. The extent of flooding depends on the state of the astronomical tide and storm surge; waves and wind may exacerbate flooding conditions.

Inland flooding results from poor drainage, surcharging the drainage system during rain events and fluctuations in groundwater elevation. The rise in groundwater elevation is thought to be responsible for some basement flooding in the Town of Islip. Recent examples of widespread flooding are those caused by the Halloween Storm of 1991, torrential rains in October 2005 and Nor'easter of April 2007.

Areas where repetitive flooding has occurred include: Bishop Lane in Holbrook, Lake Hills section of Ronkonkoma, Brown's River Road in Sayville and Fire Island.

Damaging tidal floods occur along the South Shore of Long Island at a rate of about five every four years. In any given year there may be 1.25 damaging floods per year. The frequency and severity of tidal flooding events was determined by analyzing data from a continual tide gauge located in Seaford, approximately 12.5 miles from westerly border of the Town of Islip. The mean high tide for this location is elevation 2.5. Data was analyzed to determine the number of times in a given year that water levels reached incremental ranges above mean high tide elevation 2.5. The incremental ranges were: elevation 3.0 to elevation 3.5, elevation 3.6 to elevation 4.0, elevation 4.1 to elevation 4.5 and elevation above 4.6 feet. The following table illustrates the number of yearly occurrences in each tidal range above mean high tide elevation 2.5 over a ten year period.

TIDAL	RANGE			
	То	Elev. 3.6 To	То	То
	Elev. 3.5	Elev. 4.0	Elev. 4.5	Above

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TIDAL RANGE				
	Elev. 3.0 To Elev. 3.5	Elev. 3.6 To Elev. 4.0	Elev. 4.1 To Elev. 4.5	Elev. 4.6 To Above
1987	90	3	0	1
1988	74	2	1	0
1989	63	11	2	0
1990	58	3	2	0
1991	87	10	0	1*
1992	76	3	2	4**
1993	109	9	1	1
1994	49	4	1	0
1995	100	12	4	0
1996	126	18	3	2***
1997	142	27	2	0

^{*}Elevation 5.5 on 10/31/91

The following is a brief description of some significant flood events within the Town (also see additional events listed in the discussion of hurricanes).

November 25, 1950: This northeaster caused 20 foot high waves in Jones inlet.

March 6-7, 1962: This northeaster caused extensive damage to the barrier beach. Ocean waves reached 20 to 30 feet high. Long Island was declared a disaster area.

March 28-30, 1984: This northeaster produced 20-foot wave heights and Nassau and Suffolk Counties were declared disaster areas. Tide in Massapequa reached elevation 5.0 (2.5 feet above normal high tide).

September 27, 1985: Hurricane Gloria caused extreme beach erosion.

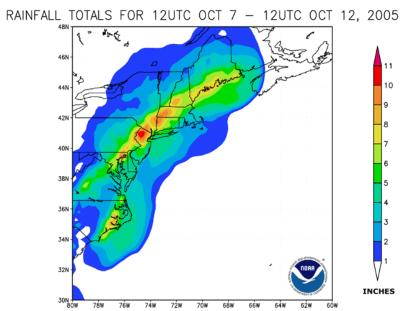
^{**}Elevation 6.2 on 12/11/92, Elevation 5.0 on 12/12/92, Elevation 4.8 on 12/13/92, Elevation 4.6 on 12/14/92

^{***}Elevation 5.2 on 10/19/96

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<u>December 10, 1992</u>: This northeaster produced 14-foot waves. Inland areas received one to two feet of snow while coastal areas received two to four inches of rain and high tidal surges.

<u>12-15 October 2005:</u> Torrential rains in the Northeast United States caused extensive flooding in parts of Maine, New Hampshire, Massachusetts, Connecticut, New York and New Jersey between October 7-12. A Preliminary Damage Assessment report for the Town of Islip states that loss to the municipality was \$131,853.90, including labor, equipment, materials and repairs. There were 1,729 flooding complaints filed with the Town. The figure below shows the rainfall totals for the storm.

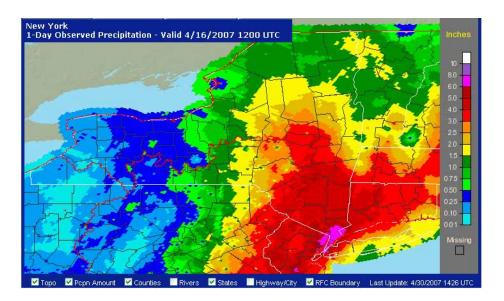


Source: http://www.ncdc.noaa.gov/oa/climate/research/2005/oct/hazards.html

<u>April 2007:</u> A Nor'easter, moved up the Eastern Seaboard during April 15- 17. Strong winds produced power outages that affected hundreds of thousands from South Carolina to Maine, while heavy rainfall generated flooding in areas of the Mid-Atlantic and Northeast. (Associated Press).

Source: http://www.ncdc.noaa.gov/oa/climate/research/2007/apr/hazards.html

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Source: http://www.erh.noaa.gov/okx/gif/pns/04162007.bmp

According to the Islip Emergency Manager, Rick Gimbl, the damage from this storm was estimated at approximately 1 million dollars. Most of this cost was due to the severe erosion of beaches on the Fire Island. The Town estimated damage to the beach front at \$599,254.00 and dunes at \$177,261.00. The peak wind at Islip for this storm was 51 mph. at 3:00 p.m., April 16th, recorded by AccuWeather.com.

Expenditures for the Storm as of 4 June 2007

Agency	Location	Item	Cost
Emergency			
Management	Fair Harbor (Beach)	12,308 cubic yds sand	\$ 67,699.00
Emergency			
Management	Dunewood (Beach)	6,963 cubic yds sand	\$ 38,298.00
Emergency			
Management	Lonelyville (Beach)	12,957 cubic yds sand	\$ 71,264.00
TOI Parks &			
Recreation	Bayport Beach	200 cubic yds sand	\$ 1,974.00
TOI Parks &			
Recreation	Homan's Creek	Clogged Drain Pipe	\$ 245.37
Inc. Village of Saltaire	Bay Front	Sand replacement	\$ 25,000.00
Inc. Village of Saltaire	Ocean Front	Sand replacement	\$ 250,000.00
Village of Ocean			
Beach	Ocean Beach	2,000 cubic yds	\$ 200,000.00
Dept. of Public Works	Entire town	Safety equipment issued	\$ 6,577.08
		Total	\$ 661,057.45

Source: Islip Emergency Management

<u>Probability of Future Events:</u> Based on previous occurrences, flooding will occur in some area of Islip Town during future storm events. FIRM and SLOSH maps are a way to predict which areas may be inundated by flood.

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<u>Cascading Effects:</u> Excess stormwater runoff or storm surge may cause failure of small weirs along the Connetquot River and streams, undercutting of embankments in freshwater and marine wetlands, transportation accidents, utility failure or water supply contamination if pumps are inundated.

<u>Vulnerability Assessment Discussion:</u> The following table shows the distribution of Islip Town in the various floodplain areas.

TOWN	Acres within A-zone	Acres within V-zone	Total acres in floodplain	of Town	of Town	Percent of Town in floodplain
Islip	6,182	1,071	7,253	9.5	1.7	11.2

Source: http://www.nyswaterfronts.net/Final_Draft_HTML/Tech_Report_HTM/Flooding/Flood_First.htm

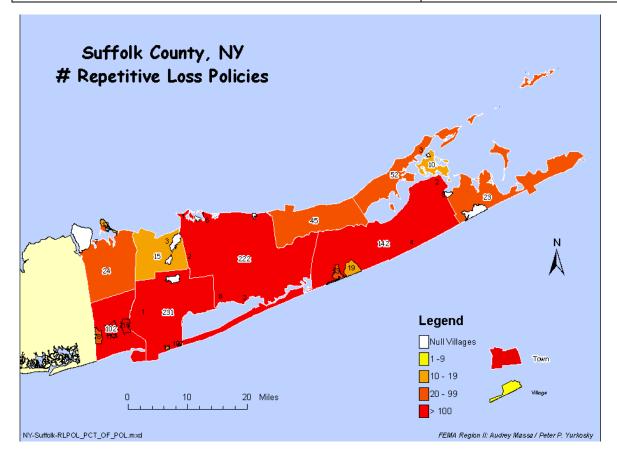
The Town's participation in the National Flood Insurance Program (NFIP) has enabled Town residents to purchase flood insurance in order to cover property damage. Flood insurance is available to all property owners and renters with moderate to low risk according to the NFIP. Purchase of flood insurance is mandatory for A and V zones.

According to information from the NFIP, there have been 2,229 losses with payment totaling \$ 21,741,562.11, 6 open losses and 615 losses closed without payment from 1 January 1978 to 30 November 2006.

Source: http://bsa.nfipstat.com/reports/1040 200611.htm#36

According to Suffolk County, there are 231 repetitive loss policies in Islip Town. A repetitive loss property is one for which two or more NFIP losses in excess of \$1,000 each have been paid over a ten year rolling period. Estimates of losses to uninsured property are not available.

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Source: FEMA Toolkit (3-Risk-4c-Suffolk-NumRLPols-2-28-03.bmp)

<u>Overall Summary Description of Jurisdiction's Vulnerability:</u> Islip is most vulnerable to flooding in the S.L.O.S.H. Zones and areas shown on FIRM maps. Flooding due to excessive stormwater, accumulation or runoff may occur throughout the Town.

<u>Impacts of Hazards on the Jurisdiction/ Community:</u> Flooding may cause disruption of normal activities in Islip Town. Impact is dependent on the extent and duration of the flooding event.

<u>Types and Numbers of Existing Structures in Hazard Area:</u> There are approximately 21,475 residences and 1,459 businesses located within the S.L.O.S.H. zones in Islip Town.

A breakdown of parcels according to S.L.O.S.H. Zone is:

Residential Parcels with ZONCOD A, AA, AAA, B, BAA, C, CA, and CAA

Zone 1: 3,289

Zone 2: 4,364

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Zone 3: 6,769

Zone 4: 7,053

Business Parcels with ZONCOD BD, BU1, BU2, and BU3

Zone 1: 131

Zone 2: 193

Zone 3: 467

Zone 4: 668

Examples of Islip Town facilities located within the S.L.O.S.H. Zone include: Town Hall, Town Hall Annex, Brookwood Hall, shellfish culture facility, Harbor Police - East Islip Marina and Animal Shelter.

Types and Numbers of Future Structures in Hazard Area: According to Steven Perrotta from the Islip Town Planning Department, the trend in the S.L.O.S.H. area is toward redevelopment, with an increase in density, especially in Bay Shore.

Estimated Potential Dollar Losses to Vulnerable Structures: According to the National Flood Insurance Program (NFIP), as of 2003, there were 3,844 policies in effect, within the flood zone in the Town of Islip. The total loss covered by these policies was \$16,697,208. There have been 231 repetitive loss policies paid \$8,028,043 for an average of \$34,753 per claim.

According to Camilo Sarmiento, Ph.D., Senior Economist, Fannie Mae, under a 100-year flood, average flood cost per-structure in Special Flood Hazard Areas is \$4,130 and NFIP's impact is \$2,335. If all homes within the flood zone in the Town of Islip were to be damaged in a flood event, the cost could be \$8,975,740 for the NFIP, with projected total damages of \$15,875,720. Since construction costs on Long Island tend to be higher than the national average, the real cost in dollars would be higher.

Source: <u>Http://www.st.nmfs.gov/st5/brown_bag_sessions/2006/documents/whopayspres</u> entationNOAA1.ppt

According to the Preliminary Damage Assessment, 1,729 flooding complaints were filed in the Town of Islip for the 12-15 October 2005, storm. According to a Preliminary damage assessment, dated 25 October fro the Islip Department of Code Enforcement, damage from the storm for labor costs, equipment and materials and repairs was estimated to be \$131,853.90.

Method Used to Prepare Estimate: The estimate was projected using the number of NFIP policies in effect in Islip Town 2003 and the average cost per-structure for a 100

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year flood event as per document cited above. In addition, a separate estimate was made using the HAZUS-MH MR2 model with an overlay of the S.L.O.S.H. map for Islip Town.

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SEVERE STORM: 252, Moderately High Hazard

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely.

Flood (storm water runoff, freshwater system and coastal flooding); Landslide (erosion and slumping of land including banks of freshwater and marine systems); Transportation Accident (traffic and aviation accidents); Utility Failure

(power outages).

Frequency: A Frequent Event
Onset: Several Hours Warning
Hazard Duration: Less Than One Day
Recovery Time: One to Two Days

Impact

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> According to National Service records, severe storms may occur in any season of the year, in any part of Islip Town.

<u>Hazard Description:</u> According to the National Weather Service, thunderstorms, tornadoes, floods, hail, lightning, winter weather and damaging winds constitute severe weather. This section focuses on thunderstorms, hail, lightning and associated high winds. Although thunderstorms can spawn tornadoes, they are addressed in a separate section as are floods and winter weather (winter storms).

In order to be considered severe, a thunderstorm must produce hail at least three quarters of an inch in diameter, wind 58 mph or higher, or tornadoes. Thunderstorms can produce winds up to 100 miles per hour and can produce a damage path extending for hundreds of miles. Damage from "straight-line" thunderstorm winds not associated with rotation account for half of all severe reports in the 48 states and is more common than damage from tornadoes.

Source: http://www.nssl.noaa.gov/primer/wind/wind_basics.html

<u>Geographic Location/Area(s) Affected:</u> Severe storms can affect any area of Islip Town, especially those in the S.L.O.S.H. zones or in the floodplains, when high winds are combined with rain, tidal inundation or storm surge. Areas where there can be damage from trees being uprooted or limbs falling should be considered to be within the affected area. This an especially important consideration for parks, preserves and open space areas.

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Extent (magnitude or severity) of Hazard: In addition to potential damage to buildings and open areas, such as parks from damaging winds, thunderstorm winds can present dangers to aviation, especially during takeoff and landing.

Source: http://www.nssl.noaa.gov/primer/wind/wind_damage.html

<u>Historical Description of Previous Occurrences:</u> According to the National Climatic Data center, there have been 24 reportable occurrences of severe storms between January 1950 and November 2006. This included 14 thunderstorm/wind events, 6 hail producing storms, 3 high windstorms and 1 lightning event. The table below is a record of these events and their severity.

Location	Date	Time	Туре	Magnitude
SUFFOLK	7/20/1982	1030	Thunderstorm Winds	0 kts.
SUFFOLK	7/20/1982	1315	Thunderstorm Winds	0 kts.
SUFFOLK	7/7/1989	1915	Hail	0.75 in.
SUFFOLK	7/7/1989	1930	Thunderstorm Winds	0 kts.
SUFFOLK	5/30/1991	1737	Hail	1.50 in.
SUFFOLK	8/11/1992	1529	Thunderstorm Winds	55 kts.
SUFFOLK	12/24/1994	0	High Wind	0 kts.
Hauppauge	4/4/1995	1348	Thunderstorm Winds	N/A
Countywide	10/21/1995	1030	Thunderstorm Winds	N/A
Countywide	10/21/1995	1155	Thunderstorm Winds	N/A
Countywide	11/11/1995	2200	High Winds	0 kts.
Countywide	11/14/1995	1500	High Winds	0 kts.
Sayville	7/8/1996	11:15 PM	Thunderstorm Winds	50 kts.
Ronkonkoma	6/26/1998	3:45 PM	Thunderstorm Winds	50 kts.
Hauppauge	6/30/1998	7:10 AM	Hail	0.75 in.
Sayville	1/18/1999	7:25 PM	Thunderstorm Winds	75 kts.
West Islip	4/21/2000	4:30 PM	Lightning	N/A
Hauppauge	8/10/2001	3:00 PM	Thunderstorm Winds	50 kts.
West Islip	6/14/2003	3:30 PM	Thunderstorm Winds	52 kts.
East Islip	5/24/2004	5:51 PM	Hail	2.00 in.
East Islip	5/24/2004	7:38 PM	Hail	1.00 in.
West Islip	8/5/2005	5:00 PM	Thunderstorm Winds	50 kts.
West Islip	7/18/2006	10:00 PM	Hail	0.88 in.
Sayville	7/18/2006	10:30 PM	Thunderstorm Winds	50 kts.

Source: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

<u>Probability of Future Events:</u> Severe storms occur frequently (at least once each year) and during any time of the year in the Town of Islip, according to the National Weather Service.

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<u>Cascading Effects:</u> Severe storms are very likely to cause cascading effects such as flooding from stormwater runoff and ponding in low-lying areas; erosion and slumping of land including banks of freshwater and marine systems; vehicle or aviation accidents caused by high winds or wind shear and power outages caused by accidents or damage from tree and other debris.

<u>Vulnerability Assessment Discussion:</u> Islip Town has 921 mobile homes and four trailer parks and 22 housing units in boats, RV's, vans or other alternate housing units. Source: http://www.co.suffolk.ny.us/planning/00IS.pdf

These types of housing are most vulnerable to damage caused by high winds.

Although mobile homes manufactured today are more durable than those constructed in the past, any wind gust that is sustained for 3 seconds over 50mph can cause damage to mobile homes. Source: http://www.nssl.noaa.gov/primer/tornado/tor_damage.html#

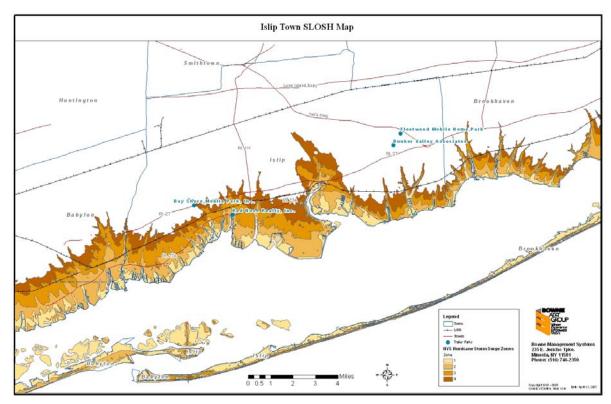
<u>Overall Summary Description of Jurisdiction's Vulnerability:</u> Although there could be damage from severe storms in any area of Islip Town, the most vulnerable areas would be those on Fire Island and in the floodplain. Mobile homes, prefabricated buildings and other alternate housing units located in boats, RV's and vans are especially vulnerable to damage from Severe Storms.

<u>Impacts of Hazards on the Jurisdiction/Community:</u> Severe storms may cause economic damage as well as injuries or loss of life in Islip Town.

Types and Numbers of Existing Structures in Hazard Area: While all structures in Islip Town may be impacted by wind and other effects of severe storms, 921 Mobile homes, 22 housing units in boats, RV's, vans and other alternate housing units are most vulnerable to this hazard.

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The location of trailer parks in Islip Town is shown on the SLOSH map below.



<u>Types and Number of Future Structures in Hazard Area:</u> Development and redevelopment of Islip Town is expected to occur, especially in the Bay Shore area according to Steven Perrotta of the Islip Department of Planning and Development.

<u>Estimated Potential Dollar Losses to Vulnerable Structures:</u> According to the Code of Federal Regulations (CFR), if certain conditions are met, an owner-occupant displaced from a mobile home or site is entitled to a replacement housing payment, not to exceed \$22,500, under §24.401.

If the displacement mobile home site is leased or rented, a displaced 180-day owner-occupant is entitled to a rental assistance payment computed as described in §24.402(b). This rental assistance payment may be used to lease a replacement site; may be applied to the purchase price of a replacement site; or may be applied, with any replacement housing payment attributable to the mobile home, to the purchase of a replacement mobile home or conventional decent, safe and sanitary dwelling.

Source: http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&sid=0b24bd050fea1ed668e7e0aa44edc6b7&rgn=div8&view=text&node=49: 1.0.1.1.17.6.16.2&idno=49

<u>Method Used to Prepare Estimate:</u> The hazard level was estimated from storm data provided by the National Oceanic and Atmospheric Administration (NOAA), National Climatic Data Center, the U.S. 2000 Census and addresses of trailer parks from Islip

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Town Planning Department. The estimate for vulnerable structures was provided from the Electronic Code of Federal Regulations, e-CFR (electronic Code of Federal regulations, posted on the internet.

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ICE STORM: 245, Moderately High Hazard

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Transportation Accident; Utility Failure;

Frequency: A Regular Event (Frequency identified)

Onset: One Day Warning

Hazard Duration: One Day

Recovery Time: One to Two Weeks

<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Severe Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> On Long Island, Ice Storms are infrequent events usually occurring in the winter; they can affect a wide area and last from a few hours to a few days.

<u>Hazard Description:</u> An ice storm is freezing rain that accumulates in a substantial glaze layer of ice resulting in serious disruptions of normal transportation, dangerously slippery surfaces and possible downed power lines.

<u>Geographic Location/Area(s) Affected:</u> Ice Storms can affect any area of Islip Town. Areas with large trees and overhead utility wires are especially vulnerable to this hazard.

Extent (magnitude or severity) of Hazard: A serious ice storm such as the one that occurred on Long Island on January 13-14, 1978 can cause utility failure, traffic accidents, personal injury and disrupt lives of individuals and businesses for the short periods in which they occur. Completion of repairs to infrastructure such as overhead wires may take several days after the incident.

Historical Description of Previous Occurrences: On 13-14 January 1978 a winter storm occurred, causing snow, snow mixed with sleet and eventually freezing rain to fall on Long Island. The freezing rain, which became heavy at times, coated exposed surfaces and eventually caused much of Long island to loose power. Air temperature remained below freezing and much of the Island remained without power into the following week. Finally a new storm on Tuesday, 17 January dropped three inches of snow and as temperatures rose above freezing, ice fell from power lines, allowing utility crews a chance to repair power lines before another storm struck Long Island a day and a half later.

Source: http://www.northshorewx.com/19780113.asp

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In 2007 a St. Valentines Day winter storm produced an ice storm and winds gusting to nearly 50 MPH. Despite the fact that there were 17,519 customers in Western Suffolk, including Islip Town, service to 91% of customers was restored in less than four hours. Source: http://www.lipower.org/newscenter/pr/2007/021507_storm.html

<u>Probability of Future Events:</u> This type of natural disaster is most likely to occur in conjunction with a Nor'easter or Severe Winter Storm and partly caused by the moderating effect of the Atlantic Ocean on Long Island's climate. Due to this, precipitation that would normally fall as snow in the winter may fall as freezing rain instead, producing an ice storm.

<u>Cascading Effects:</u> Ice coating on wires and branches or trees falling on wires may cause them to break leading to power and utility outages. Roadways, walkways and other surfaces may become coated in ice. This may cause transportation accidents or personal injury (falls).

<u>Vulnerability Assessment Discussion:</u> Since this is weather related event, vulnerability extends to all areas of Islip Town.

Overall Summary Description of Jurisdiction's Vulnerability: Residential and business areas are most vulnerable to power outages or damage from trees or tree limbs that fall on wires as a result of Ice Storms. Islip is also vulnerable to motor vehicle accidents caused by icing conditions on roads and aviation accidents caused by icing on aircraft.

<u>Impacts of Hazards on the Jurisdiction/Community:</u> Ice storms can have a negative impact on business and government because of icing conditions on roadways that restrict travel. They also make the community more vulnerable to personal injury and transportation accidents by coating roadways and other structures with ice.

<u>Types and Numbers of Existing Structures in Hazard Area:</u> Ice storms have the potential to affect all businesses and residences in Islip Town.

<u>Type and Number of Future Structures in Hazard Area:</u> Ice storms have the potential to affect all businesses and residences in Islip Town.

<u>Estimated Potential Dollar Losses to Vulnerable Structures:</u> An ice storm occurring from 4 to 10 January 2007 caused extensive damage to urban and rural areas in Canada and the United States. The following chart summarizes the damage reported from that storm for Maine, New Hampshire, Vermont and Northern New York. Damage from an ice storm on Long Island would be expected to be higher because the area is more intensively developed, but the chart illustrates the fact that Ice Storms cause damage to personal and commercial property as well as automobile accidents.

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Type of Claim	No. of Claims	% of Total	Incurred Loss (U.S. \$)	% of Total	Average Claim (U.S. \$)
Personal	106,248	76.1	140,779,000	69.7	1,325
Property					
Commercial	27,132	19.4	53,721,000	26.6	1,980
Property					
Automobile	6,270	4.5	7,541,000	3.7	1,371
Total	139,650	100.0	202,041,000	100.0	1,447

Source: Property Claims Services.

Source: http://www.iclr.org/pdf/icestorm98_english.pdf

<u>Method Used to Prepare Estimate:</u> Since there was no documentation available for Islip Town, the estimate was derived from losses from the 1998 Ice Storm that occurred in Northern New York State and Canada.

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Natural Hazards rated as moderately low: TORNADO, TSUNAMI, WILDFIRE, HURRICANE, EXTREME TEMPERATURES, WINTER STORM (SEVERE), INFESTATION, EARTHQUAKE, ICE JAM and DROUGHT

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TORNADO: 227, Moderately Low Hazard

Potential Impact: Throughout a Small Region

Cascade Effects: Highly Likely; Structural Collapse; Utility Failure

Frequency: An Infrequent Event. Two Tornadoes have occurred within

proximity of Islip Town.

Onset: No Warning

Hazard Duration: Less Than One Day **Recovery Time:** Three Days to One Week **Impact(Detailed information indicated below):**

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> While Tornados have not been recorded by the national Weather Service in Islip, there have been two incidences of occurrences near the Town. There is always a threat of tornados developing during severe thunderstorms.

<u>Hazard Description:</u> Tornados are violently rotating columns of air extending from a thunderstorm to the ground. They can form when thunderstorms develop strong vertical rotational winds and may appear nearly transparent until dust and debris are picked up or a cloud forms within the funnel. The average forward speed is 30 mph but may vary from nearly stationary to 70 mph. The strongest tornadoes have rotating winds of more than 250 mph. Tornadoes can accompany tropical storms and hurricanes as they move onto land.

Source: http://www.nws.noaa.gov/om/brochures/ttl.pdf

Tornados are rated according to wind speed and damage they produce. This is called the Enhanced F Scale, which was implemented in the United States on 1 February 2007.

Enhanced F Scale for Tornado Damage

FUJITA SCALE		DERIVED EF SCALE		OPERAT EF SCAL		
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135

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FUJITA S	SCALE		DERIVEI SCALE	O EF	OPERAT EF SCAL	
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

*** IMPORTANT NOTE ABOUT ENHANCED F-SCALE WINDS: The Enhanced F-scale still is a set of wind estimates (not measurements) based on damage. Its uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to the 28 indicators listed below. These estimates vary with height and exposure. Important: The 3 second gust is not the same wind as in standard surface observations. Standard measurements are taken by weather stations in open exposures, using a directly measured, "one minute mile" speed.

1.1.1 Enhanced F Scale Damage Indicators

NUMBER (Details Linked)	DAMAGE INDICATOR	ABBREVIATION
1	Small barns, farm outbuildings	SBO
2	One- or two-family residences	FR12
<u>3</u>	Single-wide mobile home (MHSW)	MHSW
4	Double-wide mobile home	MHDW
<u>5</u>	Apt, condo, townhouse (3 stories or less)	ACT
<u>6</u>	Motel	М
<u>7</u>	Masonry apt. or motel	MAM
8	Small retail bldg. (fast food)	SRB
9	Small professional (doctor office, branch bank)	SPB
<u>10</u>	Strip mall	SM
<u>11</u>	Large shopping mall	LSM
<u>12</u>	Large, isolated ("big box") retail bldg.	LIRB
<u>13</u>	Automobile showroom	ASR
14	Automotive service building	ASB

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NUMBER (Details Linked)	DAMAGE INDICATOR	ABBREVIATION
<u>15</u>	School - 1-story elementary (interior or exterior halls)	ES
<u>16</u>	School - jr. or sr. high school	JHSH
<u>17</u>	Low-rise (1-4 story) bldg.	LRB
<u>18</u>	Mid-rise (5-20 story) bldg.	MRB
<u>19</u>	High-rise (over 20 stories)	HRB
<u>20</u>	Institutional bldg. (hospital, govt. or university)	IB
<u>21</u>	Metal building system	MBS
<u>22</u>	Service station canopy	SSC
<u>23</u>	Warehouse (tilt-up walls or heavy timber)	WHB
<u>24</u>	Transmission line tower	TLT
<u>25</u>	Free-standing tower	FST
<u>26</u>	Free standing pole (light, flag, luminary)	FSP
<u>27</u>	Tree - hardwood	TH
<u>28</u>	Tree - softwood	TS

Source: http://www.spc.noaa.gov/efscale/ef-scale.html

<u>Geographic Location/Area(s) Affected:</u> While tornados can form in any area of Islip Town, to date they have only been recorded in adjoining areas to the North and Southeast.

Extent (magnitude or severity) of Hazard: Damage from the two Tornados that have been recorded from this area has been limited as far as area and severity. Mobile homes, power lines, trees are exceptionally vulnerable to this type of hazard. During a tornado there is an extreme danger from objects that have become windborne missiles.

<u>Historical Description of Previous Occurrences:</u> According to the National Weather Service records there have been no tornados touching down in Islip Town. However, two tornados have occurred in areas in close proximity.

On 26 June 1997, Meteorologists from the National Weather Service Upton Office confirmed that a weak F0 tornado occurred late afternoon in the Cherry Grove

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Community on Fire Island, east of Islip Town. Damage was light with a few businesses, houses, and boats at the ferry terminal at Cherry Grove being affected. The damage was limited to awnings, windows, roofs, and trees.

Source: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~ShowEvent~302645

On 30 June 1998 an F1 Tornado touched down, on Lake Shore Road, near Lake Ronkonkoma, east of Islip Town. The Tornado traveled approximately 300 yards, downed several large trees and power lines. Trees were blown into houses and caused structural damage.

Source: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~ShowEvent~337764

Map showing location of two Tornados that touched down in the vicinity of Islip, NY:

26 June 1997: 40°41'N 073° 00'W 30 June 1998: 40°50'N 073° 07'W



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<u>Probability of Future Events:</u> There is a probability that a Tornado will form in any severe thunderstorm; however there are only two records of Tornados touching down in the vicinity of Islip Town from the National Climatic Data Center in the past 56 years.

<u>Cascading Effects:</u> Depending on intensity, Tornados can affect very small areas or can create large paths of destruction. To date, the tornados affecting the areas adjoining Islip Town have caused some structural damage to buildings and no injury.

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TSUNAMI: 221, Moderately Low Hazard

<u>Potential Impact:</u> Throughout a Large Region

Cascade Effects: Highly Likely

Fire; Flood; Structural Collapse; Utility Failure; Water Supply

Contamination

Frequency: A Rare Event

Onset: Several Hours Warning

Hazard Duration: One Day

<u>Recovery Time:</u> More Than Two Weeks <u>Impact(Detailed information indicated below):</u>

Serious Injury or Death is Likely, but not in Large Numbers

Severe Damage to Private Property

Severe Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> According to FEMA, a Tsunami can strike anywhere along most of the U.S. coastline. According to the NOAA national Geophysical Data Center, 12 events have caused 18 Tsunami runups in New York State. Fourteen runups have occurred in the New York City and Long Island area, with a maximum height of 5.4 meters.

<u>Hazard Description:</u> Tsunamis (pronounced soo-ná-mees), also known as seismic sea waves (mistakenly called "tidal waves"), are a series of enormous waves created by an underwater disturbance such as an earthquake, landslide, volcanic eruption, or meteorite. A tsunami can move hundreds of miles per hour in the open ocean and smash into land with waves as high as 100 feet or more.

From the area where the tsunami originates, waves travel outward in all directions. Once the wave approaches the shore, it builds in height. The topography of the coastline and the ocean floor will influence the size of the wave. There may be more than one wave and the succeeding one may be larger than the one before. That is why a small tsunami at one beach can be a giant wave a few miles away.

All tsunamis are potentially dangerous, even though they may not damage every coastline they strike. A tsunami can strike anywhere along most of the U.S. coastline. The most destructive tsunamis have occurred along the coasts of California, Oregon, Washington, Alaska, and Hawaii.

Earthquake-induced movement of the ocean floor most often generates tsunamis. If a major earthquake or landslide occurs close to shore, the first wave in a series could reach the beach in a few minutes, even before a warning is issued. Areas are at greater risk if they are less than 25 feet above sea level and within a mile of the shoreline. Drowning is the most common cause of death associated with a tsunami. Tsunami waves and the receding water are very destructive to structures in the run-up zone.

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Other hazards include flooding, contamination of drinking water, and fires from gas lines or ruptured tanks.

Source: http://www.fema.gov/hazard/tsunami/index.shtm

<u>Geographic Location/Area(s) Affected:</u> In Islip, Fire Island would be the first area affected by a Tsunami. If the wave was large enough, it would have the potential to overwash Fire Island and strike the south shore of Islip Town.

Extent (magnitude or severity) of Hazard: The severity of a Tsunami is directly linked to the magnitude of its cause. Not all earthquakes generate tsunamis. To generate tsunamis, earthquakes must occur underneath or near the ocean, be large and create movements in the sea floor.

Source: http://wcatwc.arh.noaa.gov/tsunami2.htm

While there have been instances of 14 Tsunami runups in the New York City metropolitan area since 1871, only two are known to have originated in earthquakes. According to there is a .030 to .040 probability of an earthquake with magnitude of 4.75 occurring within 50 years and 50 km of Islip Town.

Source: http://egint.cr.usgs.gov/eg-men/html/newegprob-06.html

<u>Historical Description of Previous Occurrences:</u> According to NOAA, there are records of 14 Tsunami runups in the New York City metropolitan and Long Island are. They have occurred on both the north and south shores of Long Island. Two of these runups have been directly attributed to earthquakes. The others have various sources from storms to wakes of ships. There are no injuries, deaths or damage associated with the Tsunamis that have occurred here as a result of earthquakes.

Date	7	Tsuna	mi S	ource	,	Addl Info	Doubt-	·				Tsunar	ni Runup	Meası	ireme	ents			
		Tsu	Tsu	EQ	Vol-	Tsu	ful					Distance			Max	Max			1st
												from	Tra	vel		Inundati			
			Src	Mag	cano	Runup	Runup					Source	Tin		Water	on			Mtn
Year Mo Dy Hr Min Sec	Val C	Code						Country	Name	Latitude	Longitude		Hrs	Min	Height	Distance	Type	Per	
1871 6 18 0 0 0	2	1	*	*		*			LONG ISLAND, NEW YORK	40.5	-73.9						1		
1884 8 10 19 7	2	1	*	5.5		*			NEW YORK CITY (HARBOR), NY	40.7	-74	23.8					2		
1895 9 1 11 9	3	1	*	4.3		*		USA	ARVERNE BY THE SEA, LONG ISLAND, NY	40.591	-73.796	92.1					1		
1923 8 6	1	0	*			*		USA	ROCKAWAY BEACH, NY	40.6	-73.5						1		
1924 8 8	1	0	*			*		USA	CONEY ISLAND, NY	40.567	-73.982	0.1			4.6		1		
1931 8 19	1	9	*			*	M		LONG ISLAND, NY	40.72	-73.23	182.9					1		
1932 11 10	0	9	*	*		*	M	USA	WILLETTS POINT, NEW YORK	40.683	-73.283				5.4		1		
1944	1	0	*			*		USA	CONEY ISLAND, NY	44.6	-74.966	0.3					1		
1964 5 19 0 0 0	3	8	*			*		USA	BATTERY, NY	40.703	-74.017						2		
1964 5 19 0 0 0	3	8	*			*		USA	MONTAUK, NY	41.033	-71.95				0.1		2	15	R
1964 5 19 0 0 0	3	8	*			*		USA	NEW ROCHELLE, NY	40.911	-73.766						2		
1964 5 19 0 0 0	3	8	*			*		USA	PLUM ISLAND, NY	41.181	-72.194				0.28		2	4	R
1964 5 19 0 0 0	3	8	*			*		USA	PORT JEFFERSON, NY	40.946	-73.07						2		
1964 5 19 0 0 0	3	8	*			*		USA	WILLETTS POINT, NY	40.683	-73.283				0.1		2		

Source: ngdc NOAA/WDC Historical Tsunami Database at NGDC http://www.ngdc.noaa.gov/seg/hazard/tsu_db.shtml

<u>Probability of Future Events:</u> The probability that a Tsunami could occur is directly related to the probability that an earthquake or underwater landslide occurs. According to the U.S. Geological Survey PSHA Model (see Earthquake Hazard), Islip Town has a .030 to .040 probability of an earthquake with a Magnitude equal to or greater than 4.75

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within 50 years and 50 kilometers. This has the potential to cause a small Tsunami such as the ones that occurred in 1884 and 1895.

<u>Cascading Effects:</u> A small Tsunami would have the same effect as hurricane storm surge and wind driven waves. A major Tsunami could have devastating effects. Fire, flood, structural collapse, utility failure, water supply contamination and accumulation of massive amounts of debris would be some of the cascading effects of a large Tsunami.

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WILDFIRE: 221, Moderately Low Hazard

Potential Impact: Throughout a Small Region

Cascade Effects: Some Potential

Explosion; Utility Failure

Frequency: An Infrequent Event

Onset: No Warning

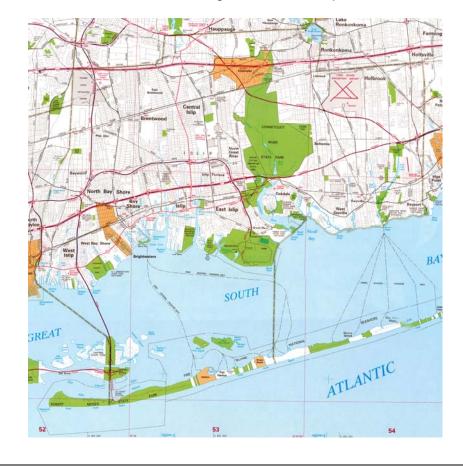
Hazard Duration: Two to Three Days Recovery Time: One to Two Days

<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death Unlikely
- Severe Damage to Private Property
- Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> Areas at risk for wildland or Urban-Wildland Interface fire include parks, preserves and open space areas which have forest, grassland and or marsh habitat. Infrastructure within these areas or adjacent homes and businesses are at risk from uncontrolled fires that may ignite. The largest areas of concern for wildfire are, Conntequot and Heckscher State Parks, wooded areas along major roadways such as the Southern State Parkway and marsh and other grasslands in Islip Town.

Park and Preserve areas are shown in green on the map below.



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<u>Hazard Description:</u> A wildfire is an uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed and spread quickly and are usually signaled by dense smoke that fills the area for miles around. Naturally occurring and non-native species of grasses, brush, and trees fuel wildfires.

A wildland fire is a wildfire in an area in which development is essentially nonexistent, except for roads, railroads, power lines and similar facilities. An Urban-Wildland Interface fire is a wildfire in a geographical area where structures and other human development meet or intermingle with wildland or vegetative fuels.

People start more than four out of every five wildfires, usually as debris burns, arson, or carelessness. Lightning strikes are the next leading cause of wildfires. Wildfire behavior is based on three primary factors:

- _ Fuel
- _ Topography
- _ Weather

The type, and amount of fuel, as well as its burning qualities and level of moisture affect wildfire potential and behavior. The continuity of fuels, expressed in both horizontal and vertical components is also a factor, in that it expresses the pattern of vegetative growth and open areas. Topography is important because it affects the movement of air (and thus the fire) over the ground surface. The slope and shape of terrain can change the rate of speed at which the fire travels. Weather affects the probability of wildfire and has a significant effect on its behavior. Temperature, humidity and wind (both short and long term) affect the severity and duration of wildfires.

Source: Understanding Your Risks: Identifying Hazards and Estimating Losses FEMA Publication 386-2

<u>Geographic Location/Area(s) Affected:</u> The largest areas of concern for wildfire are, Conntequot and Heckscher State Parks, wooded areas along major roadways such as the Southern State Parkway and marsh and other grasslands in Islip Town.

Extent (magnitude or severity) of Hazard: During spring and summer droughty periods there is an increased risk for natural or human-caused wildfire, depending on the type of fuel in the natural area, as well as moisture content of fuels, temperature and wind. In addition to risk of property damage, injury or death from wildfire, there is also a risk of traffic accident due to decreased visibility due to smoke conditions along major roadways.

<u>Historical Description of Previous Occurrences:</u> The following is a list of brush fires in Islip Town, since 2000. In 2006, classifications were changes, so all outside fires including dumpsters and garbage are reported together.

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<u>Year</u>	Number of Fires
2000	365
2001	388
2002	381
2003	196
2004	226
2006	545
2006	848

According to Newsday, on 23 April 2007, a wildfire burned about 150 of the 3,473 acres of the southeast corner of Connetquot River State Park Preserve in Bohemia. The fire was reported at 12:09 p.m. Bohemia and 31 other departments provided brush trucks and firefighters, and the blaze was declared under control at 4:05 p.m. No one was injured and no buildings were affected from the blaze which was apparently not set intentionally. The fire breaks in the Preserve apparently prevented the fire from spreading.

<u>Probability of Future Events:</u> There is a probability of wildfire in Islip Town any time fire conditions exist in natural areas. The most likely times for this would be the spring, summer or early fall.

<u>Cascading Effects:</u> In addition to property damage, injury or death and traffic accidents caused by impairment of visibility due to smoke conditions on roadways, explosion or utility failure is also possible, depending on the location of the fire.

Additional Information can be found at:

http://pb.state.ny.us/fire_plan/final_plan_chapter_3.htm

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HURRICANE: 214, Moderately Low Hazard

<u>Potential Impact:</u> Throughout a Large Region

Cascade Effects: Highly Likely

Flood; Food Shortage; Fuel Shortage; Structural Collapse;

Tornado; Trans Accident; Utility Failure

Frequency: An Infrequent Event Several Days Warning

Hazard Duration: One Day

<u>Recovery Time:</u> Three Days to One Week <u>Impact(Detailed information indicated below):</u>

Serious Injury or Death is Likely, but not in Large Numbers

Severe Damage to Private Property

Severe Structural Damage to Public Facilities

Risk Assessment Discussion: The official hurricane season in the Atlantic runs from 1 June to 30 November, however Hurricanes and storms with hurricane force winds can and do occasionally form outside this season as well. The most active month, statistically, is September. The 2005 season had the most named storms of any season on record and reflects a longer period of higher activity in the Atlantic.

Since around 1995 the Atlantic has been more active than the long-term mean, and storms have been more intense than average. However, within these multidecadal phases (another active phase was from around 1945-1970); certain years will be influenced by factors such as El Niño or La Niña. Typically for the Atlantic this translates to fewer hurricanes in El Niño years and more in La Niña years.

Source: http://www.ncdc.noaa.gov/oa/climate/research/hurricane-climatology.html

In Islip Town the most vulnerable populations for Hurricanes are individuals living on Fire Island, Trailer Parks, especially those in the S.L.O.S.H. and floodplain areas and persons who are unable to evacuate themselves, such as persons in hospitals, nursing homes and assisted living facilities.

<u>Hazard Description:</u> An intense tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74-miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye".

The Saffir-Simpson scale (shown in the table below) is the measure of a hurricane's intensity and defines tropical systems with wind speeds of 39 mph (a minimal tropical storm) to over 155 mph (a major category 5 hurricane). These categories help to forecast potential damage associated with a landfalling tropical cyclone.

Generally speaking, a minimal tropical storm will cause only light damage and will pick up only light unsecured items. There is seldom significant damage to buildings. A category one hurricane can cause damage to trees and bushes and unsecured mobile homes. Usually, stable structures are not significantly affected. A storm surge of 4-5 ft

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can be expected with a category one storm and some coastal road flooding is possible. At the other extreme, a category five storm (such as Hurricane Andrew in 1992 or Hurricane Mitch in 1998) will destroy all mobile homes and blow down all trees and shrubs. Many substantial, secure buildings will have total roof failure and extensive window and door damage. Storm surge can be anticipated at around 18 ft with a category five storm.

Category	Miles Per Hour (mph)	Knots (kt)	Kilometers Per Hour (km hr)
Tropical Storm	39-73	34-63	63-118
Cat 1	74-95	64-82	119-153
Cat 2	96-110	83-95	154-177
Cat 3	111-130	96-113	178-209
Cat 4	131-155	114-135	210-249
Cat 5	155	135	249

Source: http://www.ncdc.noaa.gov/oa/climate/research/hurricane-climatology.html

<u>Geographic Location/Area(s) Affected:</u> While the entire Town of Islip can be affected by the effects of Hurricanes, the areas most at risk are on the Fire Island barrier Beach, along the coast in the S.L.O.S.H. zones and inland, floodplain areas. The extent of flooding from hurricanes depends on the category of the storm and local conditions, including the phase of the tidal cycle. Potential flooding for a Hurricane can be estimated from the Federal Flood Insurance maps (FIRM) and S.L.O.S.H. maps. There are approximately 21,475 residences and 1,459 businesses located within the S.L.O.S.H. zones in Islip Town. Wind damage from hurricanes may extend far outside the S.L.O.S.H zones, including damage from high linear and tornadic winds.

Extent (magnitude or severity) of Hazard: The major effects from hurricanes are due to storm surge, high winds, tornados and flooding. The severity of hurricane effects varies widely according to category of hurricane, location of storm track and tidal phase.

In 1999, a New York Times article estimated that a storm identical to the 1938 hurricane would produce up to \$18 billion in damage in the New York metropolitan area. Source: http://www.seagrant.sunysb.edu/MediaArticles/NYTimes-CoGeo061399.htm

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<u>Historical Description of Previous Occurrences:</u> There are 49 records of storms that originated as Hurricanes, whose tracks have passed within 50 statute miles of Islip, N.Y. from 1851 to 2005. Of these, 9 possessed Hurricane force winds at the time they passed over Islip Town. Islip Town has not suffered a direct Hurricane strike, but the tracks for the Notnamed storm of 1938, and Hurricane Belle, are immediately adjacent to the Town boundary.

				WIND		
YEAR	MONTH	DAY	STORM NAME	SPEED(KTS)	PRESSURE(MB)	CATEGORY
1893	8	24	NOTNAMED	80	0	H1
1893	8	24	NOTNAMED	75	986	H1
1894	10	10	NOTNAMED	75	0	H1
1938	9	21	NOTNAMED	85	940	E
1944	9	15	NOTNAMED	75	0	H1
1954	8	31	CAROL	85	0	H2
1954	8	31	CAROL	85	0	H2
1960	9	12	DONNA	90	0	H2
1976	8	10	BELLE	80	977	H1
1985	9	27	GLORIA	85	951	H2

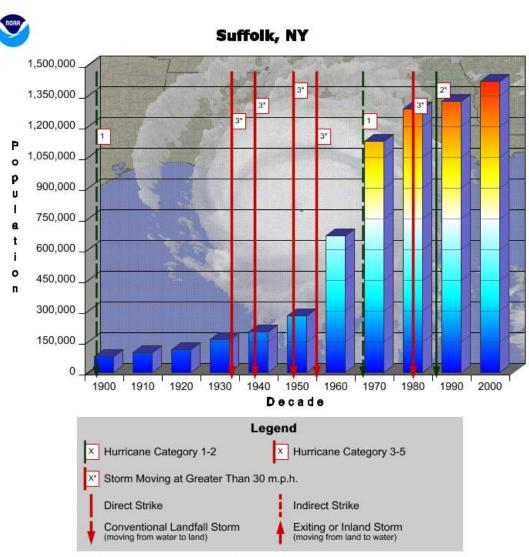
Source: http://maps.csc.noaa.gov/hurricanes/viewer.html

Map Showing Historic Hurricane Tracks in proximity to Islip Town, 1851-2005 Source: http://maps.csc.noaa.gov/hurricanes/viewer.html



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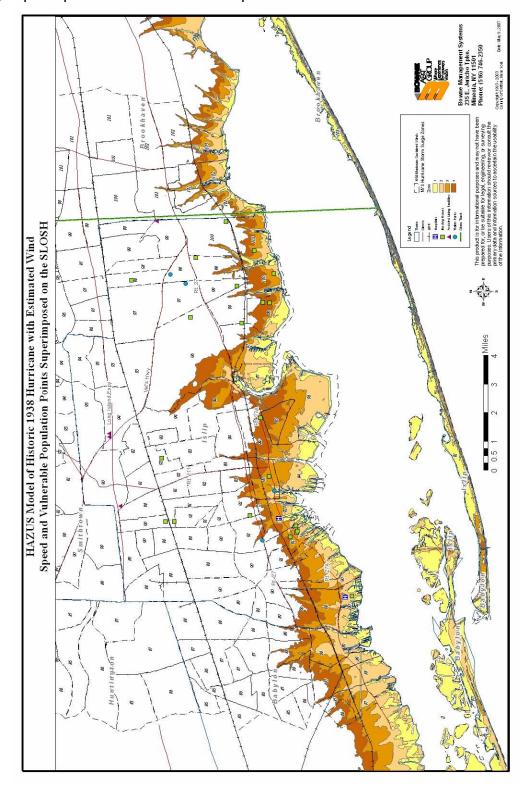
Suffolk County Population vs. Historic Hurricane EventsSource: http://maps.csc.noaa.gov/hurricanes/images/static_graphs/ny_suffolk.jpg



NOTE: Population values may be missing in some counties, particularly for earlier periods. This is most often attributable to the fact that the county had not yet been established.

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Model of Historic 1938 Hurricane, showing estimated wind speed and vulnerable populations, superimposed on the SLOSH map.



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<u>Probability of Future Events:</u> According to Hurricane researchers, Philip J. Klotzbach and William M. Gray, there is a 1.6% chance a storm of Hurricane force will track through Suffolk County in 2007. The probability for a storm of Hurricane force tracking through Suffolk County within 50 years is 35.9% and a chance of an intense Hurricane occurring during the same period is 9.70%. Their information for Suffolk County is summarized on the table below.

Source: http://typhoon.atmos.colostate.edu/forecasts/2007/april2007/

Suffolk County	
County - Coastline Distance	
(km)	145
County - Inland Border Width	
(km)	
County - 2000 Population	1,419,369
County - Prob. TS Force	6.1% (3.3%)
County - Prob. TS Vicinity	42.3% (25.7%)
County - 50 Year TS Prob.	81.30%
County - Prob. H Force	1.6% (0.9%)
County - Prob. H Vicinity	13.7% (7.7%)
County - 50 Year H Prob.	35.90%
County - Prob. IH Force	0.4% (0.2%)
County - Prob. IH Vicinity	3.3% (1.8%)
County - 50 Year IH Prob.	9.70%

Source: http://www.e-transit.org/hurricane

<u>Cascading Effects:</u> A major Hurricane could have devastating effects for any community. Depending on the category of Hurricane, storm surge, high winds, tornados and flooding can produce cascading effects from the direct impact of Hurricane precipitation, storm surge and winds as well as indirect effects from debris. Flooding can be expected in coastal as well as inland areas. Flooding and winds may cause structural collapse of buildings or utility failure or shutdown for safety purposes.

If atmospheric conditions are right, a Hurricane may spawn a Tornado. Food and fuel shortages may occur, especially in the immediate aftermath of the Hurricane due to debris and inability to utilize roadways to transport food and fuel.

Flooding, wind and debris may also cause automobile accidents, especially for persons who try to drive during the storm.

In light of the damage caused by Hurricane Katrina, it is especially important to consider the safety of persons especially vulnerable to this hazard, including residents of mobile and prefabricated homes and trailers, nursing homes, assisted living facilities, hospitals and residents of the barrier beach.

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EXTREME TEMPERATURES: 211, Moderately Low Hazard

<u>Potential Impact:</u> Throughout a Large Region

Cascade Effects: Highly Likely

Civil Unrest; Drought; Fire; Ice Jam; Structural Collapse;

Utility Failure; Wildfire

Frequency: A Regular Event Several Days Warning Hazard Duration: Two to Three Days One to Two Days

Impact(Detailed information indicated below):

- Serious Injury or Death is Likely, but not in Large Numbers
- Little or No Damage to Private Property
- Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> There is a risk of heat or cold related injuries and cascading effects anytime there are extreme temperatures in Islip Town.

<u>Hazard Description:</u> Extreme temperatures are extended periods of excessive cold or hot weather with a serious impact on human and/or animal populations particularly elderly and/or persons with respiratory ailments.

Hypothermia is the unintentional lowering of core body temperature to <95 F (<35 C). Core body temperature normally is maintained at 97.7 F (36.5 C). Most hypothermia related deaths occur during the winter in states that have moderate to severe cold temperatures (e.g., Alaska, Illinois, New York, and Pennsylvania)

During 1979--1998, the age-adjusted death rate for hypothermia in New York State was 0.2 per 100,000 population (International Classification of Diseases, Ninth Revision [ICD-9], codes E901.0, E901.8, and E901.9; excludes man-made cold [E901.1])*, compared with the median of 0.4 for the United States. Suffolk County ranked fifth among New York's 62 counties in number of hypothermia-related deaths for persons of all ages. Age-specific death rates in Suffolk County and New York increased with age Of all hypothermia-related deaths in New York and Suffolk County, 386 (53%; 95% confidence interval [CI]=±3.6%) and 25 (58%; 95% CI=±14.8%), respectively, occurred among persons aged ≥65 years. In Suffolk County, age-adjusted death rates were three times higher for men than women.

Source: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5004a1.htm

Hyperthermia is the elevation of body temperature resulting from the body's inability to dissipate heat. Continued exposure to ambient heat close to body temperature (98.6°F

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[37.0°C]) contributes to a substantial number of deaths from hyperthermia, especially among elderly persons.

Source: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5425a2.htm

Some behaviors also put people at greater risk: drinking alcohol; taking part in strenuous outdoor physical activities in hot weather; and taking medications that impair the body's ability to regulate its temperature or that inhibit perspiration.

Source: http://www.bt.cdc.gov/disasters/extremeheat/about.asp

<u>Geographic Location/Area(s) Affected:</u> Any area or Islip Town can be affected by an Extreme temperature Emergency. Although hypothermia can occur at ant time of the year, cold weather combined with precipitation or immersion increases a person's risk for this condition. Hyperthermia can occur in high temperatures or with lower temperatures if a person has health conditions that predispose them to hyperthermia or are dehydrated, especially after exercise.

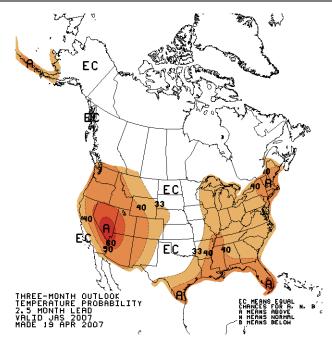
Extent (magnitude or severity) of Hazard: Every person is at risk from injury caused by extreme hot or cold weather. Elderly persons are more susceptible to the effects of heat injury than the general population. According to the 2000 U.S. Census, there are 31,871 persons 65 years and older, residing in Islip Town. There are 18,918 females and 12,953 males. There are 11,645 persons age 65 and over, with a disability, living in Islip Town.

Historical Description of Previous Occurrences:

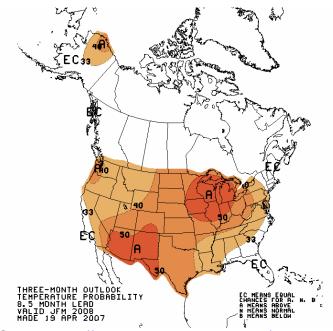
According to Long Island Power Authority, (L.I.P.A.) press releases, Heat Waves occurred on Long Island in 2002 and 2006. Islip Town operated cooling shelters for on 1-3 August 2006.

<u>Probability of Future Events:</u> According to the NOAA Climate prediction center, above normal temperatures are expected to occur on Long Island, during the summer of 2007. Normal temperatures are expected to occur during the winter of 2008.

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Source: http://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead03/off03_temp.gif



Source: http://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead09/off09_temp.gif

<u>Cascading Effects:</u> Depending on the type of Extreme Temperature event occurs, there may be cascading effects. For cold emergencies they may be: structural collapse due to snow or ice on roofs, combined with rain, ice jam on a river or stream, utility

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failure caused by an ice storm or cold-related injuries. For heat emergencies they may be drought, wildfire or an increase in heat-related injuries.

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WINTER STORM (SEVERE): 200, Moderately Low Hazard

<u>Potential Impact:</u> Throughout a Large Region

Cascade Effects: Highly Likely

Structural Collapse; Transportation Accident; Utility Failure

Frequency: A Regular Event Onset: One Day Warning

Hazard Duration: One Day

Recovery Time: One to Two Days

<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death Unlikely
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion</u>: According to records from the National Climatic Data Center, there has been at least 1 winter storm per year in Suffolk County. Therefore a risk for this hazard also exists in Islip Town.

Hazard Description: A winter storm is a storm system that develops in late Fall to early spring and deposits wintry precipitation, such as snow, sleet, or freezing rain, with a significant impact on transportation systems and public safety. For this analysis, the following could meet this definition: Heavy Snow: Six inches in 12 hours or less. Blizzard: Characterized by low temperatures, winds 35 mph or greater, and sufficient falling and/or blowing snow in the air to frequently reduce visibility to ¼ mile or less for a duration of at least three hours. Severe Blizzard: Characterized by temperatures near or below 10 degrees Fahrenheit, winds exceeding 45 mph, and visibility reduced by snow to near zero for at least three hours.

<u>Geographic Location/Area(s) Affected:</u> A Winter Storm can occur anywhere in Islip Town as a result of a Nor'easter or other winter weather event.

Extent (magnitude or severity) of Hazard: When Severe Winter Storms occur; they can make it extremely hazardous for any outdoor activities. In addition, they can have a serious negative impact on transportation, utilities, conduct of business and public and private property.

<u>Historical Description of Previous Occurrences: (Suffolk County, N.Y.)</u>

From 1994 to 2006, there have been 38 instances of heavy snow/ winter weather mix for Suffolk County, as reported by the National Climatic Data Center. Since 1999, there has been at least 1 event a year. Records are as follows:

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Date	Time	Туре
2/8/1994	1200	Snow/ice Storm
2/11/1994	1000	Snow/ice Storm
2/23/1994	1500	Snow/ice Storm
3/3/1994	300	Snow/ice Storm
2/4/1995	700	Heavy Snow
12/19/1995	2200	Heavy Snow
2/3/1996	12:00 AM	Heavy Snow
2/16/1996	6:00 PM	Heavy Snow
3/2/1996	7:00 AM	Heavy Snow
4/9/1996	2:00 PM	Heavy Snow
2/25/1999	10:20 AM	Heavy Snow
3/14/1999	11:00 PM	Heavy Snow
1/25/2000	9:45 AM	Winter Storm
2/18/2000	3:24 PM	Winter Storm
12/30/2000	8:00 AM	Heavy Snow
12/30/2000	8:50 AM	Winter Storm
1/20/2001	9:30 PM	Winter Storm
2/5/2001	1:30 PM	Heavy Snow
3/5/2001	2:00 PM	Winter Storm
12/5/2002	2:00 PM	Heavy Snow
12/25/2002	4:00 PM	Heavy Snow
2/7/2003	11:00 AM	Heavy Snow
2/17/2003	1:00 AM	Heavy Snow
3/6/2003	1:30 PM	Heavy Snow
4/7/2003	4:00 PM	Heavy Snow
12/5/2003	5:00 PM	Heavy Snow
1/15/2004	7:00 AM	Heavy Snow
1/28/2004	12:00 AM	Winter Storm
12/27/2004	2:00 AM	Heavy Snow
1/22/2005	5:00 PM	Heavy Snow
2/21/2005	7:00 AM	Heavy Snow
2/25/2005	3:00 AM	Heavy Snow
3/1/2005	1:00 AM	Heavy Snow
		Winter
3/8/2005	1:00 PM	Weather/mix
3/12/2005	8:00 AM	Heavy Snow
12/6/2005	7:00 AM	Heavy Snow
2/12/2006	5:00 AM	Heavy Snow
3/2/2006	7:00 PM	Winter Storm

Source: http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms

<u>Probability of Future Events:</u> Unless climatic conditions change, a winter storm should be expected to occur in Suffolk County, each year.

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<u>Cascading Effects:</u> During periods of heavy snowfall and snowfall combined with ice and rain flat roofs with poor drainage may become overloaded and collapse. During periods of poor visibility, where snow has accumulated or icing conditions transportation accidents may occur. If icing conditions accompany the winter storm, utility failure may occur.

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EARTHQUAKE: 175, Moderately Low Hazard

Potential Impact: Throughout a Large Region

Cascade Effects: Some Potential

Civil Unrest; Explosion; Fire; Hazmat (Fixed Site); Oil Spill; Structural Collapse; Utility Failure; Water Supply

Contamination

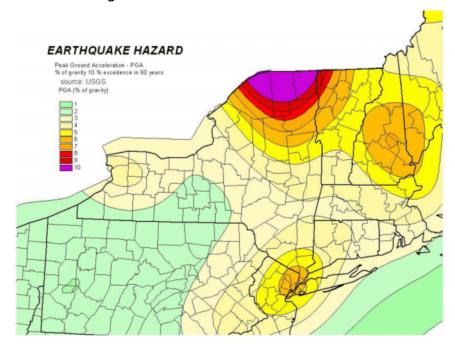
Frequency: A Rare Event Onset: No Warning

Hazard Duration: Less Than One Day **Recovery Time:** One to Two Days

Impact(Detailed information indicated below):

- Serious Injury or Death is Likely, but not in Large Numbers
- Moderate Damage to Private Property
- Moderate Structural Damage to Public Facilities

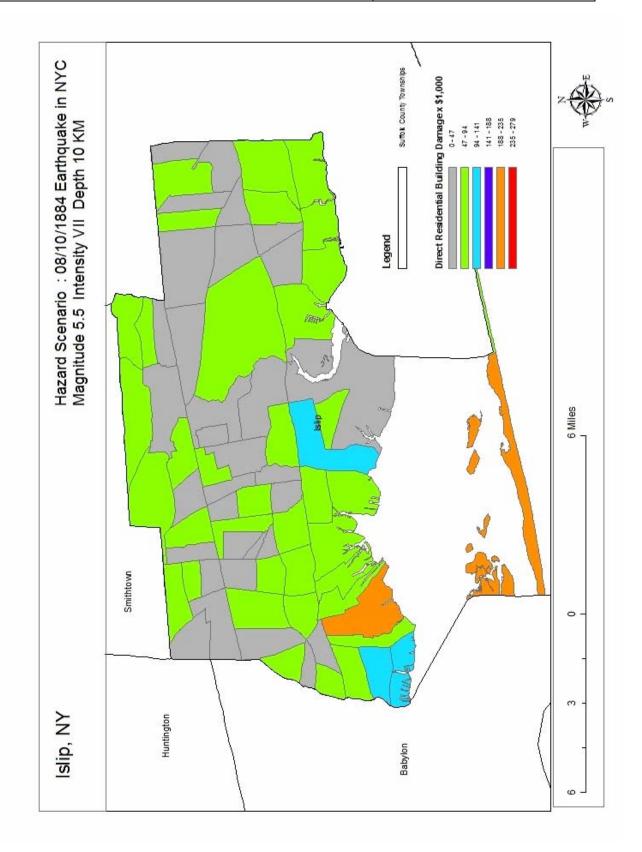
<u>Risk Assessment Discussion:</u> A damaging earthquake occurred in the vicinity of New York City in 1884. Although damage for that event was only noted as far east as Amityville, there is a potential for some damage to occur in Islip Town today from an earthquake of the same magnitude.



<u>Hazard Description:</u> A sudden motion or trembling that is caused by release of strain accumulated within or along the edge of earth's tectonic plates.

<u>Geographic Location/Area(s) Affected:</u> According to the map generated from the HAZUS Model (shown below), the areas of Islip Town that would be most vulnerable to earthquake damage would be Fire Island, West Bay Shore, East Islip and West Islip.

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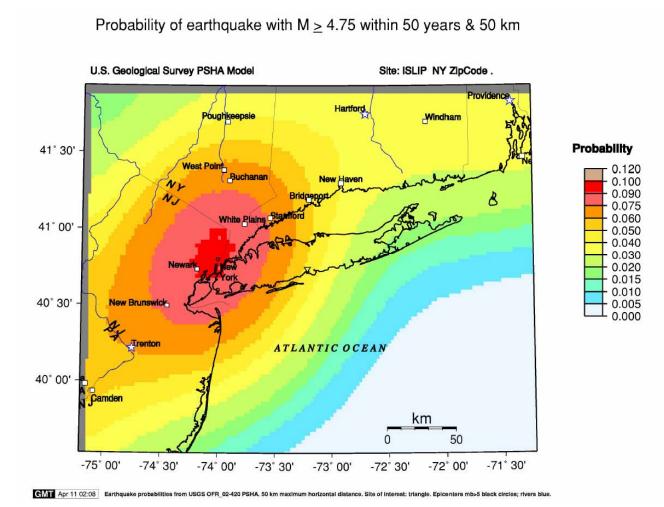
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Extent (magnitude or severity) of Hazard: An earthquake with the same magnitude as the one that occurred in 1884 would produce similar effects today, except that the area is more highly developed. Therefore the damage might be more extensive.

<u>Historical Description of Previous Occurrences:</u> The most notable earthquake for Long Island occurred on August 10, 1884. This earthquake caused large cracks in walls at Amityville and Jamaica (intensity VII). The shock was felt strongly at New York City. In addition, 30 towns from Hartford, Connecticut, to West Chester, Pennsylvania, reported fallen bricks and cracked plaster. The total felt area was estimated at 181,000 square kilometers.

Source: http://earthquake.usgs.gov/regional/states/new_york/history.php

<u>Probability of Future Events</u>: According to the U.S. geological Survey PSHA Model below, Islip Town has a .030 to .040 probability of an earthquake with a Magnitude equal to or greater than 4.75 within 50 years and 50 kilometers.



Source: http://egint.cr.usgs.gov/eg-men/html/newegprob-06.html

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<u>Cascading Effects:</u> With movement of the earth caused by earthquakes there is a possibility for explosion; fire; hazmat (fixed site); oil spill; structural collapse; utility failure; and/or water supply contamination. There is a potential for civil unrest due to the cascading effects listed above.

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INFESTATION: 173, Moderately Low Hazard

Potential Impact: Throughout a Small Region

Cascade Effects:Highly UnlikelyFrequency:An Infrequent EventOnset:Several Days WarningHazard Duration:More Than One WeekRecovery Time:More Than Two WeeksImpact(Detailed information indicated below):

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> Parts of Islip Town are currently under quarantine for Asian Longhorn Beetle, *Anoplophora glabripennis*, a woodboring insect pest from China. These beetles have the ability to infest certain hardwood trees, eventually destroying them. They are a threat to public, private and commercial hardwood trees.

According to the Electronic Code of Federal Regulations (e-CFR) Title 7: Agriculture, § 301.51-2, Regulated Articles:

The following are regulated articles:

- (a) Firewood (all hardwood species), and green lumber and other material living, dead, cut, or fallen, inclusive of nursery stock, logs, stumps, roots, branches, and debris of half an inch or more in diameter of the following genera: *Acer* (maple), *Aesculus* (horse chestnut), *Albizia* (mimosa), *Betula* (birch), *Celtis* (hackberry), *Fraxinus* (ash), *Platanus* (sycamore), *Populus* (poplar), *Salix* (willow), *Sorbus* (mountain ash), and *Ulmus* (elm).
- (b) Any other article, product, or means of conveyance not covered by paragraph (a) of this section if an inspector determines that it presents a risk of spreading Asian longhorned beetle and notifies the person in possession of the article, product, or means of conveyance that it is subject to the restrictions of this subpart.

[62 FR 10416, Mar. 7, 1997, as amended at 62 FR 60764, Nov. 13, 1997; 68 FR 26985, May 19, 2003]

Source: http://ecfr.gpoaccess.gov/cgi/t/text/text-jed/ceefr; jed/ceefr; <a href="http://ecfr.gpoaccess.gov/cgi/t/text/text-jed/ceefr

<u>Hazard Description:</u> The Asian longhorned beetle (ALB) has been discovered attacking trees in the United States. Tunneling by beetle larvae girdles tree stems and branches. Repeated attacks lead to dieback of the tree crown and, eventually, death of the tree. ALB probably traveled to the United States inside solid wood packing material

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from China. The beetle has been intercepted at ports and found in warehouses throughout the United States.

This beetle is a serious pest in China where it kills hardwood trees in roadside plantings, shelterbelts, and plantations. In the United States the beetle prefers maple species (*Acer* spp.), including *boxelder*, *Norway*, *red*, *silver*, and *sugar maples*. Other known hosts are *alders*, *birches*, *elms*, *horsechestnut*, *poplars*, and *willows*. A complete list of host trees in the United States has not been determined. Currently, the only effective means to eliminate ALB is to remove infested trees and destroy them by chipping or burning. To prevent further spread of the insect, quarantines are established to avoid transporting infested trees and branches from the area. Early detection of infestations and rapid treatment response are crucial to successful eradication of the beetle.

Source: http://www.na.fs.fed.us/spfo/pubs/pest_al/alb/alb04.htm

Part of Islip Town is currently under quarantine for Asian longhorn beetle, which means that wood and other products from trees that could be affected by the beetles, cannot be removed from the area unless it is treated. The following is a lost of trees that may be attacked by the beetles:

Highly preferred	
Acer negundo	boxelder
Acer plantanoindes	Norway maple
Acer pseudoplatanus	sycamore maple
Acer rubrum	red maple
Acer saccharinum	silver maple
Acer saccharum	sugar maple
Aesculus hippocastanum	horsechestnut
Salix spp.	willows
Ulmus americana	American elm
Moderately preferred	
Betula spp.	birches
Populus spp.	poplars
Rarely attacked	
Albizia julibrissin	mimosa or silktree
Celtis occidentalis	hackberry
Fraxinus pennsylvanica	green ash
Fraxinus americana	white ash
Platanus acerifolia	London plane
Sorbus americana	mountain ash

Source: http://www.na.fs.fed.us/fhp/alb/general/hostlist.shtm

<u>Geographic Location/Area(s) Affected:</u> According to the Electronic Code of Federal Regulations (e-CFR), Title 7: Agriculture, PART 301—DOMESTIC QUARANTINE

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NOTICES, the area in the villages of Bayshore, East Islip, Islip, and Islip Terrace in the Town of Islip, in the County of Suffolk, that is bounded as follows:

Beginning at a point where Route 27A intersects Brentwood Road; then east along Route 27A to the Southern State Parkway Heckscher Spur; then north and west along the Southern State Parkway Heckscher Spur to Carleton Avenue; then north along Carleton Avenue to the southern boundary of the New York Institute of Technology; then west along the southern boundary of the New York Institute of Technology through its intersection with Wilson Boulevard to Pear Street; then west along Pear Street through its intersection with Freeman Avenue to Riddle Street; then west along Riddle Street to Broadway; then south along Broadway to the Southern State Parkway Heckscher Spur; then west along the Southern State Parkway Heckscher Spur to Brentwood Road; then south along Brentwood Road to the point of beginning.

Map of Asian Longhorn Beetle Infestation in Islip Town as of 2005

| Consequence of Consequence

Source: http://www.uvm.edu/albeetle/infestation/maparchive.html

Extent (magnitude or severity) of Hazard: The are of Islip Town that was infested by Asian Longhorn Beetles has been treated and a quarantine of wood and wood products was imposed on the infested area.

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<u>Historical Description of Previous Occurrences:</u>

September 8, 1999 – ALB found in Islip, Long Island, NY.

<u>September 12, 2000</u> – An interim rule, effective September 6, 2000, is published in the Federal Register announcing the expansion of the quarantine boundaries in New York City and Long Island, New York. This rule covers the addition of Manhattan and Islip as well as the expansion of the Queens, Brooklyn, and Central Long Island quarantines. The New York quarantine is now 104 square miles.

March 26 and 27, 2001 – USDA and NYSDAM hold public meetings in Islip and Massapequa, respectively, to discuss upcoming imidacloprid treatments.

August 8, 2001 – Final rule to expand New York quarantines, effective September 6, 2000, is published. This rule covers the addition of Manhattan and Islip as well as the expansion of the Queens, Brooklyn, and Central Long Island quarantines. The New York quarantine is now 104 square miles.

<u>Spring 2003</u> – Treatment activities in New York are scaled back due to lack of funding. Treatment occurred in Manhattan and Islip.

<u>Spring 2004</u> – Treatment operations increased from the 2003 level. In Islip, trees are treated using trunk and soil injection techniques to ½ mile radius.

Source: http://www.aphis.usda.gov/plant_health/plant_pest_info/asian_lhb/chron-2000-pres.shtml

<u>Probability of Future Events:</u> The spread of Asian Longhorn beetles to other tree populations should be able to be prevented if USDA quarantine restrictions are followed and with ongoing monitoring of area trees for rapid detection of beetle infestations.

<u>Cascading Effects:</u> Highly unlikely if USDA quarantine restrictions are followed.

Additional Information can be found at:

www.na.fs.fed.us/fhp/alb/

www.aphis.usda.gov/ppq/ep/alb/

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ICE JAM: 169, Moderately Low Hazard

Potential Impact: Throughout a Small Region

Cascade Effects: Some Potential

Dam Failure; Flood;

Frequency: An Infrequent Event
Onset: One Day Warning
Hazard Duration: Two to Three Days
Recovery Time: One to Two Days

Impact(Detailed information indicated below):

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> Although there are no events on record, there is some risk from Ice Jam in Islip Town where streams may flow through culverts or pass under roadways.

<u>Hazard Description:</u> Flooding that occurs when warm weather and rain break up frozen rivers and the broken ice floats downriver until it is blocked by an obstruction, creating an ice dam that blocks the channel and causes flooding upstream.

Geographic Location/Area(s) Affected: from West to East:

Route 27A Montauk Highway

Sampawams Creek

Willetts Creek

Trues Creek

Thompsons Creek

Penataquit Creek

Awixa Creek

Orowoc Creek

Champlin Creek

Connetquot River

County Route 85

Green Creek

Browns River

Route 27 Sunrise Highway

Sampawams Creek

Penataquit Creek

Orowoc Creek

Champlin Creek

Connetquot River

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Extent (magnitude or severity) of Hazard: This type of flooding should only occur after periods of extreme cold, when ice is breaking up in ponds or if there is a very heavy rainfall when there is ice, covering part of the waterway.

<u>Historical Description of Previous Occurrences:</u> There is no specific record of an Ice Jam in Islip Town, but it is considered a hazard due to the waterways that flow under roads, especially Sunrise Highway (NY 27), Montauk Highway (NY 27A) and County Route 85.

<u>Probability of Future Events:</u> This type of flooding should only occur after periods of extreme cold, when ice is breaking up in ponds or if there is a very heavy rainfall when there is ice, covering part of the waterway.

<u>Cascading Effects:</u> There is a risk of flooding, if culverts become blocked or partially blocked by ice, during a rain event. There also some risk of failure of weirs, if floodwaters cause erosion around structures.

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DROUGHT: 162, Moderately Low Hazard

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Wildfire

Frequency: An Infrequent Event

Onset: More Than One Week Warning

Hazard Duration: More Than One Week
Recovery Time: Three Days to One Week
Impact(Detailed information indicated below):

Serious Injury or Death Unlikely

Little or No Damage to Private Property

Little or No Structural Damage to Public Facilities

Risk Assessment Discussion:

<u>Hazard Description:</u> A drought is a prolonged period of limited precipitation affecting the supply and quality of water. The Planning Committee assigned a score of 162 according to the HAZNY model ranking system.

Meteorologists and hydrologists have their own precise definitions of drought. Meteorologists compare deficiencies in precipitation to normal levels, while hydrologists consider stream flow and water levels in aquifers, lakes and reservoirs along with precipitation. The State of New York uses elements of both disciplines to determine when a drought is occurring.

New York is divided into nine "drought management regions" based roughly on drainage basin (watershed) and county lines. The NYSDEC monitors precipitation, lake and reservoir levels, stream flow and groundwater levels at least monthly in each region and more frequently during periods of drought. The NYSDEC uses this data to assess the condition of each region, which can range from "normal" to "drought disaster".

New York also uses the Palmer Drought Index, a measure of soil moisture computed by the National Weather Service. The two indices reveal different aspects of drought. The Palmer Index, with its emphasis on soil moisture, is useful in exploring agricultural impacts. The State Index helps assess the impact on human welfare and the regional economy.

<u>Geographic Location/Area(s) Affected:</u> A drought would affect areas throughout Islip Town.

Extent (magnitude or severity) of Hazard: Islip Town normally has an annual precipitation of 46.07 inches. Since 1910, there have been 9 years in which drought have occurred on Long Island.

Source: http://www.mobot.org/education/02programsresources/mappingenvironment/my natural community/table.htm

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<u>Historical Description of Previous Occurrences:</u> The following is a list of Drought Periods in the Long Island Region (including the Town of Islip):

Drought periods	Duration	Lowest PDSI
9/1910 - 7/1911	11 months	-3.77 in 5/1911
3/1930 - 2/1931	12 months	-3.81 in 9/1930
11/1931 - 2/1932	4 months	-3.39 in 12/1931
11/1949 - 1/1950	3 months	-3.63 in 1/1950
9/1964 - 12/1964	4 months	-3.88 in 11/1964
5/1965 - 8/1966	16 months	-5.63 in 12/1965
3/1985 - 4/1985	2 months	-3.65 in 4/1985
7/1999 - 8/1999	2 months	-3.94 in 7/1999
1/2002 - 5/2002	5 months	-4.22 in 2/2002

PDSI = Palmer Drought Severity Index

Source: http://www.nrcc.cornell.edu/drought/NY_drought_periods.html

The *Palmer Drought Severity Index (PDSI)* (known operationally as the *Palmer Drought Index (PDI)*) attempts to measure the duration and intensity of the long-term drought-inducing circulation patterns. Long-term drought is cumulative, so the intensity of drought during the current month is dependent on the current weather patterns plus the cumulative patterns of previous months. Since weather patterns can change almost literally overnight from a long-term drought pattern to a long-term wet pattern, the PDSI (PDI) can respond fairly rapidly.

Source: http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html

<u>Probability of Future Events:</u> U.S. Weather Bureau records since 1910 indicates that droughts have occurred every 15 to 20 years. The drought of record on Long Island occurred from 1964 through 1966.

<u>Cascading Effects:</u> There is some risk of wildfire, especially in grassland, marsh, Pine Barrens and dry upland forest habitat, during drought. Drought would also especially have negative impacts on agriculture, horticulture and surface water quantity and quality.

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Natural Hazard rated as low: EPIDEMIC

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EPIDEMIC: 143, Low Hazard

<u>Potential Impact:</u> Throughout a Large Region

Cascade Effects: Some Potential

Civil Unrest

Frequency: A Rare Event

Onset: More Than One Week Warning

Hazard Duration: More Than One Week
Recovery Time: More Than Two Weeks
Impact(Detailed information indicated below):

- Serious Injury or Death is Likely, but not in Large Numbers
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> At this time, Islip Town is located in an area where there is a risk for West Nile Virus from mosquitoes and Lyme disease or other tick-borne illness from deer ticks.

According to Suffolk County Health services, as of 2 May 2007, there have been 12 occurrences of rabid raccoons in Suffolk County. They have been recovered from Huntington (2), Lloyd Harbor (9), and Cold Spring Harbor (1). There have been no occurrences from Islip Town., however Huntington is located approximately 10 miles from Islip Town.

Hazard Description: An epidemic is the occurrence or outbreak of disease to an unusual number of individuals or proportion of the population, human or animal.

Geographic Location/Area(s) Affected: The geographic area where vectors for the West Nile may be encountered, may actually be around residential and industrial areas in Islip Town. According to the United States Environmental protection Agency, the principal mosquito carrier of West Nile virus on the East coast, Culex pipiens, does not prefer to reproduce in most wetlands. These species reach greatest numbers in large urban centers, breeding easily in artificial containers—birdbaths, discarded tires, buckets—and in human-created environments, such as clogged gutters, animal waste lagoons and sewage effluent. Adapted to polluted habitats, these Culex species generally avoid swamps and salt marshes altogether.

Source: http://www.epa.gov/owow/wetlands/pdf/WestNile_pr.pdf

Lyme Disease and other tick borne diseases such as Rocky Mountain Spotted Fever, Babesiosis, Erlichiosis are a threat wherever there is a population of ticks. In Suffolk County, dog, deer and lone star ticks are capable of carrying disease and can be found in residential as well as open space areas, especially areas that are unpaved.

Extent (magnitude or severity) of Hazard: At this time, only West Nile Virus and Lyme and other tick-borne diseases have been found in Islip Town. A potential risk for

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rabies exists because rabies has been found in Suffolk County in the Town of Huntington. The Islip Town annual rabies vaccination program for pets and vigilance on the part of pet owners is an important part of reducing the threat of rabies in Islip Town.

<u>Historical Description of Previous Occurrences:</u> According to Suffolk County Department of Health Services West Nile Virus (WNV) was found in Islip Town. During 2001, specimens from 56 birds, 3 mosquito pools and 1 horse from Islip Town, tested positive for WNV.

Source: http://co.suffolk.ny.us/Health%20Services/scwnvposspecbytown.pdf

In 2006, 64 dead birds, 57 mosquito pools and 2 humans tested positive for West Nile Virus in Suffolk County.

Source: http://www.health.state.ny.us/nysdoh/westnile/update/2006/wnv_summary.htm

According to Newsday, New York State Department of Health reports that the number of yearly incidences of Lyme disease in Suffolk County doubled to 561 cases from 2003 to 2004, with a slight decrease to 542 in 2005. Cases of Lyme disease in Nassau County jumped from 59 cases in 2004 to 122 cases in 2005. In its most recent numbers, the CDC reported 51,000 cases of Lyme disease in New York in 2004, putting New York at the top of the list nationally.

Source: http://www.newsday.com/news/printedition/longisland/ny-litick074809050jul07,0,3297667.story?coll=ny-linews-print

<u>Probability of Future Events:</u> West Nile Virus and tick-borne illness, especially Lyme disease are an ongoing problem. Rabies is of concern to Islip, since it has occurred on Long island in Nassau and northern Suffolk Counties.

There are other epidemic producing diseases in the world that could spread to Long Island, especially various strains of Influenza.

<u>Cascading Effects:</u> A cascading effect of a major epidemic might be Civil Unrest.

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Human and Technological Hazards rated as moderately high: FIRE, TERRORISM

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FIRE: 270, Moderately High Hazard

Potential Impact: Single Location, throughout Islip Town

Cascade Effects: Highly Likely

Explosion; Structural Collapse; Utility Failure

<u>Frequency:</u> A Frequent Event

Onset: No Warning

Hazard Duration: Less Than One Day Less Than One Day

<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> According to the Suffolk County Department of Fire, Rescue and Emergency Services, in 2006, 1,650 structural fires occurred in the Town of Islip. From 9 January 2001 to 2 February 2007, twenty four fatalities have occurred in buildings, four in vehicles and one as a result of a barbeque.

<u>Hamlet</u>	Number of Victims
Brentwood	9
Bay Shore	7
Holbrook	3
Central Islip	3
West Islip	2
Sayville	2
Bohemia	1
Oakdale	1
Islip Terrace	1
	Total = 29

<u>Hazard Description:</u> Fire includes uncontrolled burning in residential, commercial, industrial, institutional, or other structures in a developed area.

The United States has a severe fire problem, more so than is generally perceived. Nationally, there are millions of fires, thousands of deaths, tens of thousands of injuries, and billions of dollar loss - which makes the U.S. fire problem one of great national importance. Between 1996 and 2005, an average of 3,932 Americans lost their lives and another 20,928 were injured annually as the result of fire. These averages do not reflect the events of September 11, 2001.

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The following table shows the number of fires, deaths, injuries and dollar loss in the United States from 1996 to 2005.

Year	Fires	Deaths	Injuries	Direct Dollar Loss In Millions
1996	1,975,000	4,990	25,550	\$9,406
1997	1,795,000	4,050	23,750	\$8,525
1998	1,755,000	4,035	23,100	\$8,629
1999	1,823,000	3,570	21,875	\$10,024
2000	1,708,000	4,045	22350	\$11,207
2001¹	1,734,500	3,745	20,300	\$10,583
2001²	-	2,451	800	\$33,440
2002	1,687,500	3,380	18,425	\$10,337
2003	1,584,500	3,925	18,125	\$12,307
2004³	1,550,500	3,900	17,875	\$9,794
2005	1,602,000	3,675	17,925	\$10,672

¹ Excludes the events of September 11, 2001.

Source: National Fire Protection Association Fire Loss in the U.S. During 2005 Abridged Report.

1.2 Where Fires Occurred - 2005

- There were 1,602,000 fires in the United States. Of these:
 - 50.0% were Outside and Other Fires
 - 31.9% were Structure Fires
 - 18.1% were Vehicle Fires
- Residential fires represented 24.7 percent of all fires and 77.5 percent of structure fires.
- 82.4 percent of all civilian fire fatalities occurred in the home, where home is defined as one- and two-family dwellings and apartments. Of those, approximately 84.8 percent occurred in single-family homes and duplexes.
- Intentionally set structure fires represented 7.2% of all structure property loss.
- 21,000 intentionally set vehicle fires occurred, causing an estimated \$113 million in property damage.

² These estimates reflect the number of deaths, injuries and dollar loss directly related to the events of September 11, 2001.

³ The decrease in direct dollar loss in 2004 reflects the Southern California wildfires with an estimated loss of \$2,040,000,000 that occurred in 2003.

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Source: National Fire Protection Association Fire Loss in the U.S. During 2005 Abridged Report.

<u>Geographic Location/Area(s) Affected:</u> All areas of the Town of Islip have a potential for fire, however most fatalities from January 2001 to February 2007 have occurred in Brentwood and Bay Shore.

Extent (magnitude or severity) of Hazard: In 2006, there were 3,235 automatic alarms (false alarms) and 1,650 structure fires reported in Islip Town. Each one of the fires caused economic and sometimes, personal loss. The rate of deaths by Fire in Islip Town for 2001 to 2006, is below the national average and above the average per Fire in new York State.

Historical Description of Previous Occurrences:

<u>Year</u>	Number of Fires
2000	3,594
2001	3,465
2002	3,612
2003	3,807
2004	3,009
2005	4,381
2006	*4,903

In 2006, structure fire numbers represent 3,253 automatic alarms and 1,650 structure fires. A breakdown of this category was not available for previous years. Source: Suffolk County Department of Fire, Rescue, Emergency Services

<u>Probability of Future Events:</u> Structural fires can occur anytime, anyplace in Islip Town.

<u>Cascading Effects:</u> Depending on the location and size of the structural fire, explosion, structural collapse and utility failure could occur as a result.

<u>Vulnerability Assessment Discussion:</u> According to data supplied from the Suffolk County Department of Fire, Rescue and Emergency Services, most fire fatalities from 2001 to 2007 occurred in Brentwood and Bay Shore. Out of 29 victims, 10 are from incidents where more than one victim was killed as a result of fire; two from a vehicle the remainder from structural fires.

Overall Summary Description of Jurisdiction's Vulnerability: According to statistics from the U.S. Fire Administration, in 2004, the National Fire Death rate was 12.4 deaths per million persons. The New York State Fire Death rate was 10.3 and the calculated rate for Islip Town, based on the U.S. census was 12.39, which is just below the National Average, but above the average for New York State. This was based on 4

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fatalities in a population of 322,612 individuals. Two persons perished as a result of a vehicle fire, two from a structural fire.

Source: http://www.usfa.dhs.gov/statistics/state/index.shtm and Suffolk County Department of Fire, Rescue and Emergency Services Statistics.

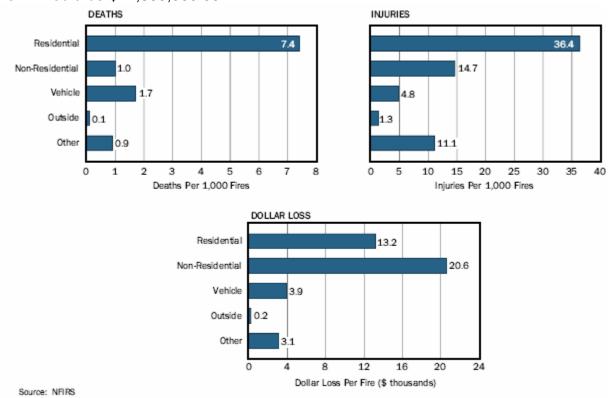
<u>Impacts of Hazards on the Jurisdiction/Community:</u> The impact of fire on the community is a personal and economic loss, especially where there is injury or loss of life.

<u>Types and Numbers of Existing Structures in Hazard Area:</u> All structures in Islip Town have some vulnerability to fire.

Type and Number of Future Structures in Hazard Area: Any future structures in Islip Town will have some vulnerability to fire. Improvements in fire safety and adherence to building code and occupancy will have a direct effect on hazard vulnerability and damage,

Estimated Potential Dollar Losses to Vulnerable Structures:

The chart below shows the average numbers of fire casualties and dollar loss per fire by general property type for the United States in 2001. The average between residential and non-residential fires if \$16,900.00. Using these tables, which are uncorrected for inflation, and based on 1,650 fires occurring in 2006, the loss from structural fires in Islip Town would be \$27,885,000.00.



Source: http://www.usfa.dhs.gov/downloads/pdf/publications/fius13/ch2.pdf

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<u>Method Used to Prepare Estimate:</u> The estimate was prepared using 2001 data of dollar loss in fires and the number of fires that occurred in Islip Town in 2006.

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TERRORISM: 252, Moderately High Hazard

Potential Impact: Throughout a Large Region

Cascade Effects: Highly Likely

Civil Unrest; Epidemic; Explosion; Fire; Structural Collapse; Trans Accident; Utility Failure; Water Supply Contamination

Frequency: A Rare Event Onset: No Warning

Hazard Duration:Less Than One DayRecovery Time:More Than Two Weeks

<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death to Large Numbers
- Severe Damage to Private Property
- Severe Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> Terrorism could occur in Islip Town, especially where highly visible, social, religious, symbolic, governmental or economically important events or facilities are located.

<u>Hazard Description:</u> Terrorism is the threat of use of violence to achieve political/social ends usually associated with community disruption, intense fear and/or multiple injuries or deaths.

<u>Geographic Location/Area(s) Affected:</u> Suffolk County Police have identified 35 sites in the Town of Islip that may be vulnerable to acts of Terrorism. These will not be identified in documents that will be released to the public as the Police Department feels that this information is of a sensitive nature. The Emergency Manager of Islip Town has this list and it serves as an addendum to this report.

Extent (magnitude or severity) of Hazard: There is some risk of terrorism in Islip Town. The most vulnerable areas are monitored by law enforcement and emergency management personnel from local to national agencies. They work with operators of these facilities to develop Emergency Operations Plans. For security reasons, these plans will not be included with this report.

<u>Historical Description of Previous Occurrences:</u> According to the FBI, there have been acts of Domestic and International Terrorism that have occurred in Suffolk County, near Islip and the New York Metropolitan Area. Two examples from the FBI website are reported below:

DECEMBER 9, 19, AND 30, 2000

Multiple Arsons

Suffolk County, Long Island, New York (Middle Island, Miller Place and Mount Sinai)

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(One act of Domestic Terrorism)

In December 2000 a group of high school-aged activists adhering to the extremist environmental ideology espoused by the ELF set a series of arson fires at residences under construction in Suffolk County, Long Island, New York. On December 9, 2000, the activists set fire to a home under construction using milk-type containers filled with gasoline and topped with gasoline-soaked sponges and incense sticks as burn-down fuses. Three other homes were targeted on the same date; however, the incendiary devices placed in those homes failed to ignite.

On December 19, 2000, another fire was intentionally set in a home under construction. Gasoline poured over debris piled in the rear corner of the house was later determined to be the cause of the fire.

On December 30, 2000, fires were reported at three homes under construction in a nearby area. The assailants used plastic water bottles filled with gasoline, topped with gasoline-soaked sponges, to start the blazes. Incendiary devices placed in two other homes failed to ignite. Spray-painted messages, including "BURN THE RICH," "STOP URBAN SPRAWL," and "IF YOU BUILD IT WE WILL BURN IT E.L.F.," were found on several of the homes. Additionally, a spray-painted figure of an elf was found on the garage of one of the homes.

On January 15, 2001, members of the FBI-New York City Police Department Joint Terrorism Task Force interviewed five high school students, including George Mashkow and Jared McIntyre. Following these interviews, task force members seized from the home of Jared McIntyre items and devices used in the vandalism and arsons. On January 19, 2001, acting on information obtained during the interviews of McIntyre and Mashkow, the task force secured a search warrant for the home of another activist, Matthew Rammelkamp. The search resulted in the seizure of empty water bottles, literature relating to ALF and ELF, and cans of spray paint. On February 9, 2001, Jared McIntyre pled guilty to malicious destruction by arson. On February 14, 2001, George Mashkow, age 17, and Matthew Rammelkamp, age 16, pled guilty to malicious destruction by arson. The same day a grand jury returned an indictment against Conor Cash, age 19, who was subsequently arrested and held for trial.

SEPTEMBER 11, 2001

Aircraft Attack

New York, New York; Arlington, Virginia; Stony Creek Township, Pennsylvania

(One act of International Terrorism)

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On the morning of September 11, 2001, four U.S. commercial airliners were hijacked by four coordinated teams of terrorists. The 19 hijackers who carried out the operation were affiliated with *Al-Qaeda*, a worldwide terrorist network that had previously attacked U.S. military and diplomatic targets. The hijackers used knives, boxcutters, and possibly pepper spray to attack passengers and flight crews and to commandeer the aircraft. After taking control of the aircraft, the hijackers flew toward preselected targets on the U.S. East Coast. Three of the commandeered aircraft reached their destinations, destroying the twin towers of the World Trade Center in New York City and badly damaging the Pentagon in Arlington, Virginia. The fourth aircraft crashed into a remote field in Stony Creek Township, Pennsylvania, as passengers attempted to regain control of the airplane. All of the passengers on each of the aircraft were killed in the attack, as were more than 2,500 people in the twin towers and the Pentagon. In total, 2,783* people died in the September 11 attack, making it the most deadly act of terrorism ever committed. The September 11 attack also marked the first known suicide terrorist attack carried out in the United States since the FBI began keeping terrorist records.

Source: http://www.fbi.gov/publications/terror/terror2000_2001.htm

<u>Probability of Future Events:</u> Terrorism could occur in Islip Town. The agencies tasked with preventing this hazard reduce the probability, through their work.

<u>Cascading Effects:</u> Acts of Terrorism can take many forms. Depending on the type of Terrorist act, the following cascading effects may take place: Civil Unrest; Epidemic; Explosion; Fire; Structural Collapse; Trans Accident; Utility Failure; Water Supply Contamination

<u>Vulnerability Assessment Discussion:</u> There are activities, events and facilities within the Town of Islip that may be vulnerable to acts of Terrorism.

<u>Overall Summary Description of Jurisdiction's Vulnerability:</u> Islip Town has facilities and events which are highly visible, social, religious, symbolic, governmental or economically important, it is vulnerable to terrorism. Some facilities have a larger risk than others. The Town of Islip and the Suffolk County Police Department are aware of and have plans for protection of these facilities.

<u>Impacts of Hazards on the Jurisdiction/Community:</u> Terrorist acts in the community have the potential to cause loss, whether it is personal or public, economic or social.

<u>Types and Numbers of Existing Structures in Hazard Area (Estimate):</u> At least 35 sites that have multiple buildings that have been identified by the Suffolk County Police Department.

Type and Number of Future Structures in Hazard Area (Estimate): Any structure that would be built in the future that would fit into the target profile.

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<u>Estimated Potential Dollar Losses to Vulnerable Structures:</u> The cost would be the replacement value to the facility and its contents. Islip Town maintains insurance property records and appraisal reports for all its properties. As of 31 December 2005, the value of buildings, land improvements, equipment and infrastructure, belonging to the Town of Islip was \$1,907,723,608 for reproduction of new and \$1,725,397,757 for reproduction new, less depreciation.

Source: Summary Appraisal Report for Insurance Purposes, as of 31 December 2005 from the American Appraisal Associates, 19 May 2006.

Method Used to Prepare Estimate: see above

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Human and Technological Hazards rated as moderately low: OIL SPILL, HAZMAT (IN TRANSIT), UTILITY FAILURE, HAZMAT (FIXED SITE), TRANS ACCIDENT, EXPLOSION, WATER SUPPLY CONTAMINATION, STRUCTURAL COLLAPSE, FUEL SHORTAGE

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OIL SPILL: 240, Moderately Low Hazard

Potential Impact: Several Locations
Cascade Effects: Some Potential

Water Supply Contamination

Frequency: A Frequent Event Onset: No Warning

Hazard Duration: Less Than One Day Less Than One Day

Impact(Detailed information indicated below):

- Serious Injury or Death Unlikely
- Moderate Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> Petroleum and petroleum-based product spills were reported for the Town of Islip on 60% of the days, last year.

<u>Hazard Description:</u> An oil spill is defined as the uncontrolled or accidental discharge of petroleum into water and/or onto land.

<u>Geographic Location/Area(s) Affected:</u> All areas of the Town have been affected by petroleum spills.

<u>Extent (magnitude or severity) of Hazard:</u> According to the records from the New York State Department of Environmental Conservation cited below, reportable petroleum spills in Islip Town that occurred throughout the year.

<u>Historical Description of Previous Occurrences:</u> From 4 March 2006 to 1 March 2007, there were 222 spills of oil and petroleum-based products in Islip Town as reported by the New York State Department of Environmental Conservation.

Type of Spill	Number	Volume
#2 Fuel Oil	95	< 1 Gal. to 650 Gal.
Gasoline	57	< 1 Gal. to 45 Gal.
Transformer Oil	25	1 Gal. to 200 Gal.
Diesel	21	< 1Gal. to 50 Gal.
Unknown Petroleum	7	< 1 Gal. to 25 Gal.
Waste Oil/Used Oil	7	< 1 Gal. to 10 Gal.
Hydraulic Oil	3	20 to 50 Gal.
Kerosene	2	amount not available
Jet Fuel		to 32 Gal.
Motor Oil	1	amount not available
Lube Oil	1	amount not available
#6 Fuel Oil	1	amount not available
Total Spills	222	

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Source: http://www.dec.state.ny

<u>Probability of Future Events:</u> The probability of a reportable oil or petroleum-based product spill in Islip is very likely.

<u>Cascading Effects:</u> Petroleum spills can have a negative effect on water quality. If a product is flammable, it can cause a fire.

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HAZMAT (IN TRANSIT): 230, Moderately Low Hazard

Potential Impact: Throughout a Small Region

Cascade Effects: Highly Likely

Air Contamination; Explosion; Fire; Trans Accident; Utility

Failure; Water Supply Contamination

Frequency: A Regular Event No Warning Hazard Duration: One Day

Recovery Time: One to Two Days

Impact(Detailed information indicated below):

- Serious Injury or Death is Likely, but not in Large Numbers
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> There is some risk for a HAZMAT in transit release during transport by motor vehicle. In discussion with the Emergency Manager from Islip Town, it is not likely there would be a release of hazardous materials by rail.

Hazard Description: This is a hazard from the uncontrolled release of materials during transport, which when released can result in death or injury to people and/or damage to property and the environment through the material's flammability, toxicity, corrosiveness, chemical instability, reactivity and/or combustibility.

<u>Geographic Location/Area(s) Affected:</u> HAZMAT release could occur on any road, but most likely to occur on major roadways including the Long Island Expressway (495), Sunrise Highway (NY 27), Montauk Highway (NY27A) and Veterans Memorial Highway (454)

Extent (magnitude or severity) of Hazard: HAZMAT, in transit release would occur mainly on major roadways in Islip Town.

<u>Historical Description of Previous Occurrences:</u> According to the New York State Department of Environmental Conservation database, most of the HAZMAT, in transit spills in Islip Town involve petroleum products. In general, most of the HAZMAT spills that do not involve petroleum products are from fixed sites.

Source: http://www.dec.state.ny.us

<u>Probability of Future Events:</u> There is a possibility that a transportation accident could occur that may include a HAZMAT incident in Islip Town.

<u>Cascading Effects:</u> The following cascading effects are possible from a HAZMAT release, depending on the material and amount of the release: Air Contamination; Explosion; Fire; Trans Accident; Utility Failure; Water Supply Contamination (groundwater).

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UTILITY FAILURE: 228, Moderately Low Hazard

<u>Potential Impact:</u> Throughout a Large Region

Cascade Effects: Highly Likely

Extreme Temps; Trans Accident

Frequency: A Regular Event Onset: No Warning

Hazard Duration: Less Than One Day Recovery Time: One to Two Days

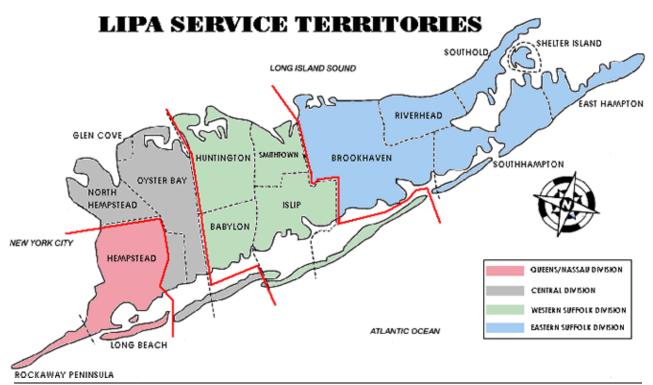
<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death Unlikely
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> There is a possibility that an area of Islip Town will experience an occasional minor interruption in electric or telephone service. A major utility failure could be a cascading effect of a hazard such as a hurricane, severe storm, earthquake or act of terrorism. Three major blackouts have occurred in the Long Island area, the most recent one was on 15 August 2003.

<u>Hazard Description:</u> A utility failure is defined as the loss of electric and/or natural gas supply, telephone service or public water supply as a result of an internal system failure and not by the effects of disaster agents.

<u>Geographic Location/Area(s) Affected:</u> Electric service is provided to Islip Town by the Long Island Power Authority (LIPA). Any area in Islip Town may experience a utility failure.



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LIPA Western Suffolk Division Statistics: Serves approximately 315,000 Customers 305 square miles of service territory 2,689 miles of overhead wire 1,905 miles of underground cable 152,644 utility poles

Source: http://www.lipower.org/company/stats.html

Islip Sewage treatment facilities

Extent (magnitude or severity) of Hazard: The following is LIPA's performance as of 17 May 2007:

CAIDI, MAIFI and SAIFI

These terms are important measurements or indices of LIPA's performance.

- CAIDI Customers Average Interruption Duration Index
- MAIFI Momentary Average Interruption Frequency Index
- SAIFI System Average Interruption Frequency Index

CAIDI measures the average restoration time, or how long it takes LIPA to re-establish electric service should there be an outage. In 2005, LIPA's CAIDI was 64 minutes.

MAIFI measures "momentary" interruptions. How long is a momentary interruption? Usually less than five minutes. Last year, **LIPA's MAIFI remained at 4.9; the best since 1996**, when we began to keep statistics.

SAIFI measures the length of time between service interruptions. In 2005, LIPA's average SAIFI was **14.1 months** between interruptions. This means that a large portion of our customers have not lost power in over a year!

Source: http://www.lipower.org/company/relipability.html

Historical Description of Previous Occurrences:

Major area blackouts occurred on the following dates: 9 November 1965
14 July 1977
15 August 2003

During the August 2003 blackout, Islip Macarthur Airport was closed. Source http://www.elcon.org/Documents/EconomicImpactsOfAugust2003Blackout.pdf

There are minor power outages, and momentary interruptions that occur.

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<u>Probability of Future Events:</u> According to current LIPA statistics, the average length of time between service interruptions is 14.1 months.

<u>Cascading Effects:</u> Extreme temperatures and transportation accidents are possible with a utility failure. According to Bill Davidson, Director of Government Affairs for LIPA, as of 30 June 2007, there are 400 critical care customers in Islip Town who have registered with the utility. These customers would have to be relocated or be the first priority for restoration of electric power.

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HAZMAT (FIXED SITE): 223, Moderately Low Hazard

Potential Impact: Single Location Cascade Effects: Some Potential

Air Contamination; Water Supply Contamination;

Frequency: A Regular Event
Onset: No Warning
Hazard Duration: One Day

Recovery Time: One to Two Days

<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death Unlikely
- Severe Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> There is some risk associated with Hazmat (Fixed Site) facilities.

<u>Hazard Description:</u> The uncontrolled release of material from a stationary facility, which when released can result in death or injury to people and/or damage to property and the environment through the material's flammability, toxicity, corrosiveness, chemical instability, reactivity and/or combustibility.

<u>Geographic Location/Area(s) Affected:</u> The following is a list of 42 fixed sites in the Town of Islip or an adjacent area as identified using the HAZUS-MH Model. In addition to these sites, there are other locations where materials such as wastewater or sewage may be released.

Name	Address	City	State	Chemical Name
A & M MFG. CO. INC.	275 FELDMAN CT.	BAY SHORE	NY	TRICHLOROETHYLENE
NBTY INC.	105 ORVILLE DR.	ВОНЕМІА	NY	ZINC COMPOUNDS
JASCO INDS. INC.	42 WINDSOR PL.	CENTRAL ISLIP	NY	TOLUENE
GASSER & SONS INC.	440 MORELAND RD.	COMMACK	NY	TRICHLOROETHYLENE
HOLTSVILLE LNG FACILITY	UNION AVE.	HOLTSVILLE	NY	METHANOL
PRIDE SOLVENTS & CHEMICAL CO. OF NY INC.	6 LONG ISLAND AVE.	HOLTSVILLE	NY	CERTAIN GLYCOL ETHER
PRIDE SOLVENTS & CHEMICAL CO. OF NY INC.	6 LONG ISLAND AVE.	HOLTSVILLE	NY	N-BUTYL ALCOHOL

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Name	Address	City	State	Chemical Name
PRIDE				
SOLVENTS &				
CHEMICAL CO.	6 LONG ISLAND			
OF NY INC.	AVE.	HOLTSVILLE	NY	DICHLOROMETHANE
PRIDE				
SOLVENTS &				
CHEMICAL CO.	6 LONG ISLAND			
OF NY INC.	AVE.	HOLTSVILLE	NY	ETHYLENE GLYCOL
PRIDE		775-75-71		
SOLVENTS &				
CHEMICAL CO.	6 LONG ISLAND			
OF NY INC.	AVE.	HOLTSVILLE	NY	N-HEXANE
PRIDE	7	11021011222		
SOLVENTS &				
CHEMICAL CO.	6 LONG ISLAND			
OF NY INC.	AVE.	HOLTSVILLE	NY	METHANOL
PRIDE	AVL.	TIOLIGVILLE	111	WETTANGE
SOLVENTS &				
CHEMICAL CO.	6 LONG ISLAND			
OF NY INC.	AVE.	HOLTSVILLE	NY	METHYL ETHYL KETONE
PRIDE	AVL.	TIOLISVILLE	INI	WETTTEETTTERETONE
SOLVENTS &				
CHEMICAL CO.	6 LONG ISLAND			
OF NY INC.	AVE.	HOLTSVILLE	NY	METHYL ISOBUTYL KETO
PRIDE	AVE.	HOLISVILLE	INT	WETHTEISOBOTTERETO
SOLVENTS &				
	6 LONG ISLAND			
	AVE.	HOLTSVILLE	NY	TETRACHLOROETHYLENE
OF NY INC. PRIDE	AVE.	HOLISVILLE	INI	TETRACHLOROETHTLENE
SOLVENTS & CHEMICAL CO.	6 LONG ISLAND			
	AVE.	HOLTSVILLE	NY	TOLUENE
OF NY INC.	AVE.	HOLISVILLE	INT	TOLUENE
PRIDE				
SOLVENTS &	C LONG IOLAND			
CHEMICAL CO.	6 LONG ISLAND	UOLTO//// E	NINZ	TDICLU ODOETLING ENE
OF NY INC.	AVE.	HOLTSVILLE	NY	TRICHLOROETHYLENE
PRIDE				
SOLVENTS &	0 1 0 10 10 1 1 1 1			
CHEMICAL CO.	6 LONG ISLAND			\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
OF NY INC.	AVE.	HOLTSVILLE	NY	XYLENE (MIXED ISOMER
PRIDE				
SOLVENTS &				
CHEMICAL CO.	6 LONG ISLAND			
OF NY INC.	AVE.	HOLTSVILLE	NY	"1,1-DICHLORO-1-FLUO
TOSCO				
PIPELINE CO.				
HOLTSVILLE	586 UNION AVE.	HOLTSVILLE	NY	CUMENE
TOSCO	586 UNION AVE.	HOLTSVILLE	NY	"1,2,4-TRIMETHYLBENZ

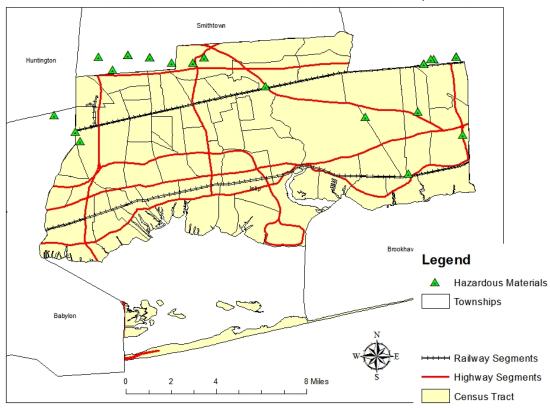
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Name	Address	City	State	Chemical Name
PIPELINE CO.				
HOLTSVILLE				
TOSCO				
PIPELINE CO.	FOCULINION AVE	HOLTOVILLE	NIV/	NADUTUAL ENE
HOLTSVILLE	586 UNION AVE.	HOLTSVILLE	NY	NAPHTHALENE
TOSCO PIPELINE CO.				
HOLTSVILLE	586 UNION AVE.	HOLTSVILLE	NY	BENZENE
TOSCO	JOO CIVICIVITY	TIOLIGVILLE	141	DENZENE
PIPELINE CO.				
HOLTSVILLE	586 UNION AVE.	HOLTSVILLE	NY	METHYL TERT-BUTYL ET
TOSCO				
PIPELINE CO.				
HOLTSVILLE	586 UNION AVE.	HOLTSVILLE	NY	XYLENE (MIXED ISOMER
TOSCO				
PIPELINE CO.				
HOLTSVILLE	586 UNION AVE.	HOLTSVILLE	NY	N-HEXANE
TOSCO				
PIPELINE CO.	500 110 110 11 10 17		.	0.401.0115.4415
HOLTSVILLE	586 UNION AVE.	HOLTSVILLE	NY	CYCLOHEXANE
TOSCO				
PIPELINE CO. HOLTSVILLE	586 UNION AVE.	HOLTSVILLE	NY	ETHYLBENZENE
TOSCO	300 UNION AVE.	HOLISVILLE	INT	EINTLBENZENE
PIPELINE CO.				
HOLTSVILLE	586 UNION AVE.	HOLTSVILLE	NY	TOLUENE
UNITED	98 LINCOLN	1102101122		. 0.101.11
MARBLE INC.	AVE.	SAYVILLE	NY	STYRENE
MASON INDS.				
INC.	350 RABRO DR.	HAUPPAUGE	NY	TOLUENE
UNEXCELLED				
CASTINGS	663 OLD			
CORP.	WILLETS PATH	HAUPPAUGE	NY	COPPER
POLYMER				
PLASTICS	CE DAV/IDO DD		NIX/	TOLLIENE DUOCOVANATE
CORP.	65 DAVIDS DR.	HAUPPAUGE	NY	TOLUENE DIISOCYANATE
POLYMER PLASTICS				
CORP.	65 DAVIDS DR.	HAUPPAUGE	NY	DIBUTYL PHTHALATE
POLYMER	OU DAVIDO DA.	HAUFFAUGE	INI	DIBUTTERTHIALATE
PLASTICS				
CORP.	65 DAVIDS DR.	HAUPPAUGE	NY	DIISOCYANATES
POLYMER	23 27.11.20 21.11			
PLASTICS				
CORP.	65 DAVIDS DR.	HAUPPAUGE	NY	XYLENE (MIXED ISOMER
ARKAY				,
PACKAGING				
CORP.	22 ARKAY DR.	HAUPPAUGE	NY	"ISOPROPYL ALCOHOL (

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Name	Address		City	State	Chemical Name
ARKAY					
PACKAGING					
CORP.	22 ARKA	AY DR.	HAUPPAUGE	NY	XYLENE (MIXED ISOMER
ARKAY					
PACKAGING					
CORP.	22 ARKA	AY DR.	HAUPPAUGE	NY	"1,2,4-TRIMETHYLBENZ
PALL RAI MFG.	225	MARCUS			
CO.	BLVD.		HAUPPAUGE	NY	TERT-BUTYL ALCOHOL
PALL RAI MFG.	225	MARCUS			
CO.	BLVD.		HAUPPAUGE	NY	DICHLOROMETHANE
PALL RAI MFG.	225	MARCUS			
CO.	BLVD.		HAUPPAUGE	NY	TOLUENE
STANDARD	35	MARCUS			
MEMS INC.	BLVD.		HAUPPAUGE	NY	"SULFURIC ACID (1994

HAZUS- MH Fixed HAZMAT Sites in and Near Islip Town



<u>Extent (magnitude or severity) of Hazard:</u> There are HAZMAT (Fixed site) facilities located primarily along major roadways or railways in Islip Town.

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<u>Historical Description of Previous Occurrences:</u> According to the New York State Department of Environmental Conservation, there were 33 non-petroleum HAZMAT spills in Islip Town, from 4 March 2006 to 1 March 2007.

Material	Number Releases	of
Unknown Material	13	
Raw Sewage	4	
Not ID'd in DB	5	
Sulfuric Acid	2	
Paint	2	
Mercury	1	
Ammonia	1	
Asphalt	1	
Cooking Grease	1	
Wastewater	1	
Unknown Hazardous		
Material	1	
Potassium		
Permanganate	1	
Total	33	

Source: http://www.dec.state.ny.us

<u>Probability of Future Events:</u> There is a possibility that there will be HAZMAT (fixed site) releases in Islip Town.

<u>Cascading Effects:</u> If the HAZMAT chemicals are released into the environment, they can cause air, soil or water contamination

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TRANSPORTATION ACCIDENT: 218, Moderately Low Hazard

Potential Impact: Single Location Cascade Effects: Highly Likely

Fire; Oil Spill; Structural Collapse; Water Supply

Contamination

Frequency: A Regular Event No Warning

Hazard Duration: Less Than One Day Less Than One Day

Impact(Detailed information indicated below):

Serious Injury or Death is Likely, but not in Large Numbers

Moderate Damage to Private Property

Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion</u>: There are risks for motor vehicle, aviation, rail and ferry accidents in Islip Town.

<u>Hazard Description:</u> A mishap involving one of more conveyances on land, sea, and/or in the air that results in mass casualties and/or substantial loss of property.

Geographic Location/area(s) Affected: Major roadways in Islip Town including the Long Island Expressway (495), Sunrise Highway (NY27), Montauk Highway (NY 27A) and Veterans Memorial Highway (454) could experience a mass casualty incident as a result of a roadway, rail, aviation or ferry accident.

There are two Long Island Rail Road passenger lines in Islip Town. The following is a list of locations where the Rail Road intersects roads in Islip Town:

CROSSING	LOCATION#	TOWN	LOCATION EASTWARD	LOCATION WESTWARD
Higbie Lane	S384	West Islip	1st East of Babylon Station	1st West of Bridge #4 Babylon
Windsor Avenue	S392	Brightwaters	2nd East of Babylon Station	3rd West of Bayshore Station
Clinton Avenue	S397	Bay Shore	3rd East of Babylon Station	2nd West of Bayshore Station
Fifth Avenue	S399	Bay Shore	Westend Bayshore Station	Westend Bayshore Station
Fourth Avenue	S401	Bay Shore	Eastend Bayshore Station	Eastend Bayshore Station
Third Avenue	S402	Bay Shore	2nd East of Bayshore Station	4th West of S409
Second Avenue	S403	Bay Shore	3rd East of Bayshore Station	3rd West of S409
First Avenue	S404	Bay Shore	CLOSED	CLOSED
Penataquit Avenue	S408	Bay Shore	4th East of Bayshore Station	2nd West of S409
Brentwood Road	S409	Bay Shore	1st East of S410	1st West of S409
Saxon Avenue	S414	Islip	2nd East of S410	3rd West of Islip Station
Grant Avenue	S421	Islip	3rd East of S410	2nd West of Islip Station
Nassau Avenue	S423	Islip	4th East of S410	1st West of Islip Station
Ped Xing - Islip Sta.				
Islip Avenue	S425	Islip	Eastend Islip Station	Eastend Islip Station
(RTE-111)				
Irish Lane	S430	East Islip	2nd East of Islip Station	1st West of Great River Station
Connetquot Avenue	S446	Great River	Eastend Great River Station	Eastend Great River Station

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CROSSING	LOCATION#	TOWN	LOCATION EASTWARD	LOCATION WESTWARD
Oakdale Avenue	S467	Oakdale	Eastend Oakdale Station	Eastend Oakdale Station
Locust Avenue	S477	Oakdale	2nd East of Oakdale Station	3rd West of Sayville Station
Cherry Street	S486	Sayville	3rd East of Oakdale Station	2nd West of Sayville Station
Greeley Avenue	S490	Sayville	Westend Sayville Station	Westend Sayville Station
Railroad Avenue	S492	Sayville	Eastend Sayville Station	Eastend Sayville Station
Lincoln Avenue	S493	Sayville	2nd East of Sayville Station	1st West of "Y"
McConnell Avenue	S504	Bayport	1st East of "Y"	5th West of S515
Oakwood Avenue	S505	Bayport	2nd East of "Y"	4th West of S515
Snedicor Avenue	S509	Bayport	3rd East of "Y"	3rd West of S515
Bayport Avenue	S510	Bayport	4th East of "Y"	2nd West of S515
Gillette Avenue	S513	Blue Point	5th East of "Y"	1st West of S515
Wicks Road	439	Central Islip	Eastend C.I. Station	Eastend C.I. Station
(Fifth Ave)	476	Ronkonkoma	2nd East of C.I. Station	2nd West of Ronkonkoma Station
Second Street	402	Brentwood	2nd East of Deer Park Station	4th West of Brentwood Station
Fourth Street				
Washington Ave.	407	Brentwood	3rd East of Deer Park Station	3rd West of Brentwood Station
Islip Ave.	409	Brentwood	4th East of Deer Park Station	2nd West of Brentwood Station
Peters Blvd.	410	Brentwood	Westend Brentwood Station	Westend Brentwood Station
Carleton Ave.	423	Brentwood	1st East of Brentwood	3rd West of C.I. Station
Lowell Ave.	429	Central Islip	2nd East of Brentwood	2nd West of C.I. Station
Ocean Ave.	437	Central Islip	3rd East of Brentwood	1st West of C.I. Station
Pond Road	486	Ronkonkoma	3rd East of C.I. Station	1st West of Ronkonkoma Station
Knickerbocker Ave.	494	Ronkonkoma	1st East of Ronkonkoma Station	1st West of KO 2 Home Signal (11W)
Coates Ave.	499	Ronkonkoma	2nd East of Ronkonkoma Station	2nd West of 505 Signal
Holbrook Road	500	Holbrook	3rd East of Ronkonkoma Station	1st West of 505 Signal
Waverly Ave.	518	Holtsville	4th East of Ronkonkoma Station	2nd West of Medford Station

Source: Islip Town Office of Emergency Management

Ferry service to Fire Island is provided from Bay Shore and Sayville.

Extent (magnitude or severity) of Hazard: Islip Town plays a very important role in Long Island's transportation. Major roadways linking eastern Suffolk County with north and south shores of Long Island, run through Islip Town.

Long Island MacArthur Airport provided service for over 2.1 million passengers in 2005 with 92 flights per day. It also houses a National Guard Unit.

Source: http://www.isliptown.org/macarthur.cfm

<u>Historical Description of Previous Occurrences:</u> In 1993, a twin-engine aircraft, originating in Islip, crashed near the East Hampton Town Airport.

Source: http://query.nytimes.com/gst/fullpage.html?res=9F0CEEDF1239F934A35753C1 A965958260

<u>Probability of Future Events:</u> There is a probability that a transportation accident can occur in Islip Town.

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<u>Cascading Effects:</u> Depending on the type of transportation accident, Fire; Oil Spill; Structural Collapse or Water Supply Contamination can occur as a result.

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EXPLOSION: 204, Moderately Low Hazard

<u>Potential Impact:</u> Single Location <u>Cascade Effects:</u> Highly Likely

Fire; Structural Collapse; Utility Failure

Frequency: An Infrequent Event

Onset: No Warning

Hazard Duration: Less Than One Day Recovery Time: One to Two Days

<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> An explosion may occur in Islip Town as a cascading effect of another hazard such as Fire, Transportation Accident or Terrorist incident.

<u>Hazard Description:</u> An explosion is the threat or actual detonation of an explosive device or material with the potential of inflicting serious injury or damage to property.

<u>Geographic Location/Area(s) Affected:</u> An explosion can occur anywhere in Islip Town.

Extent (magnitude or severity) of Hazard: The magnitude of the explosion depends on the material and amount and how the explosion occurs. There is always a potential for injury and loss of life from an explosion.

<u>Historical Description of Previous Occurrences:</u> September 26, 2000 Minivan Strikes Tanker Car, Kills Driver

In East Islip, NY a minivan slammed into a gas tanker outside a gas station, triggering an explosion that shook houses several blocks away and shot flames more than 100 feet in the air. The minivan's driver was killed, but the tanker car driver escaped injury when he jumped out of his vehicle upon impact. Roads were wet and visibility was poor at the time of the accident, but police have charged the tanker driver with aggravated unlicensed operation of a motor vehicle and is investigating who was at fault in the accident.

Source: http://www.acusafe.com/Newsletter/Stories/1000News-MonthlyIncidents.htm

<u>Probability of Future Events:</u> An explosion can occur in Islip Town due to Fire, Transportation Accident or terrorist Incident.

<u>Cascading Effects:</u> There is a possibility of Fire, Structural Collapse and Utility Failure due to an explosion.

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WATER SUPPLY CONTAMINATION: 187, Moderately Low Hazard

Potential Impact: Throughout a Small Region

Cascade Effects: Some Potential

Epidemic

Frequency: An Infrequent Event

Onset: No Warning Hazard Duration: One Day

Recovery Time: One to Two Days

Impact(Detailed information indicated below):

- Serious Injury or Death Unlikely
- Little or No Damage to Private Property
- Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion</u>: In Islip Town, drinking water is provided by the Suffolk County Water Authority. The risk to the public water supply would be a cascading effect of another hazard such as Hurricane or HAZMAT incident or a Terrorist act.

<u>Hazard Description:</u> Water supply contamination is defined as the contamination or potential contamination or potential contamination of surface or subsurface public water supply by chemical or biological materials that result in restricted or diminished ability to use the water source.

<u>Geographic Location/Area(s) Affected:</u> Water supply contamination could occur anywhere in Islip Town as a cascading effect of another hazard.

Extent (magnitude or severity) of Hazard: Suffolk County obtains drinking water from aquifers below the ground. These may be contaminated by HAZMAT spills, saltwater intrusion or a terrorist incident.

<u>Historical Description of Previous Occurrences:</u> According to the Suffolk County Water Authority 2006 drinking Water Report, they test for 290 chemicals and if contamination of a well source is identified, the Suffolk County Water Authority can either provide treatment or withdraw the well from service, so that all applicable drinking water standards are met.

Source: http://www.scwa.com/SCWA_AWQR.pdf

<u>Probability of Future Events:</u> There is a possibility that there may be wells contaminated by HAZMAT spills, saltwater intrusion or a terrorist incident.

<u>Cascading Effects:</u> If the public water supply becomes contaminated, illness or an epidemic can result.

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STRUCTURAL COLLAPSE: 174, Moderately Low Hazard

Potential Impact: Single Location Cascade Effects: Highly Likely

Explosion; Fire; Transportation Accident; Utility Failure

Frequency: A Rare Event Onset: No Warning

Hazard Duration: Less Than One Day
Recovery Time: Three Days to One Week
Impact(Detailed information indicated below):

- Serious Injury or Death is Likely, but not in Large Numbers
- Severe Damage to Private Property
- Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> In Islip Town, a structural collapse is more likely to occur as a cascade effect from another hazard, such as Flood, Fire Severe Storm, Hurricane or explosion.

<u>Hazard Description:</u> A structural Collapse is defined as a sudden structural failure, partially or fully, of buildings, bridges or tunnels, threatening human life and health.

<u>Geographic Location/Area(s) Affected:</u> A structural collapse could affect any area of Islip Town.

Extent (magnitude or severity) of Hazard: The magnitude or severity of this hazard depends on the cause and structure affected. With any collapse, however, there is always a risk of injury or loss of life.

<u>Historical Description of Previous Occurrences:</u> According the Planning Department, there have been two instances of collapses in Islip Town. One was a wall in 2005 and one was a section of brickface.

<u>Probability of Future Events:</u> In and of itself, this is a moderately low hazard. Structural Collapse is more likely a cascading effect of other hazards

<u>Cascading Effects:</u> Structural collapse can be both a cause of cascading effects and a cascading effect. It can cause explosions, transportation accidents, utility failure and fire.

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FUEL SHORTAGE: 164, Moderately Low Hazard

Potential Impact: Throughout a Large Region

Cascade Effects: Some Potential

Civil Unrest; Utility Failure

Frequency: An Infrequent Event Several Days Warning More Than One Week One to Two Days

<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death Unlikely
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion</u> It is expected that a fuel shortage would only be a cascading effect of a hazard such as a Hurricane, Utility Failure, Winter Storm or an act of terrorism.

<u>Hazard Description:</u> A fuel shortage is defined as a situation in which the normal quantity and/or timely delivery of fuel supplies to distributors and retail establishments is interrupted

Geographic Location/Area(s) Affected: A fuel shortage would affect all of Islip Town.

Extent (magnitude or severity) of Hazard: This would be a very serious situation.

<u>Historical Description of Previous Occurrences:</u> There was a gasoline shortage in the 1970's.

<u>Probability of Future Events:</u> A fuel shortage should only occur as a cascading effect of another hazard.

<u>Cascading Effects:</u> A fuel shortage may cause Civil Unrest or a Utility Failure.

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Human and Technological Hazards rated as low: CIVIL UNREST, FOOD SHORTAGE, RADIOLOGICAL (IN TRANSIT)

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CIVIL UNREST: 149, Low Hazard

Potential Impact: Several Locations
Cascade Effects: Some Potential

Fire

Frequency: A Rare Event

Onset: Several Hours Warning to no warning

Hazard Duration: Two to Three Days Recovery Time: One to Two Days

Impact(Detailed information indicated below):

- Serious Injury or Death is Likely, but not in Large Numbers
- Moderate Damage to Private Property
- Moderate Structural Damage to Public Facilities

<u>Risk Assessment Discussion:</u> There is some risk for Civil Unrest in Islip Town as a cascading event from another hazard. There is also a risk from gangs, for example, MS-13.

<u>Hazard Description:</u> Civil unrest is an individual or collective action causing serious interference with the peace, security, and/or functioning of a community (e.g., riot).

Geographic Location/Area(s) Affected: Civil Unrest could occur in any place in Islip Town

Extent (magnitude or severity) of Hazard: According to the U.S. Department of Justice there is gang activity by MS-13 within Islip Town. MS-13 is a violent, international street gang comprised primarily of immigrants from El Salvador, Honduras, and Guatemala, many of whom are in the United States illegally. With hundreds of members locally, the MS-13 is the largest street gang on Long Island. In Islip Town, the gang's cliques are located primarily in Brentwood, and Islip.

Source: http://www.usdoj.gov/usao/nye/pr/2006/2006apr20.htm

<u>Historical Description of Previous Occurrences:</u>

A recent occurrence was, 3 May 2007. According to Newsday, after gunfire broke out between two gangs on a residential street a short distance from where students were outside for a gym class, officials said.

Suffolk police said the altercation took place on Stein Drive at 12:50 p.m., less than 200 feet from the district high school's athletic field.

A 19-year-old sitting in a white Honda was stabbed in the left forearm with a long machete or sword, police said. A member of the victim's gang then fired at the other group, striking a neighbor's white vinyl fence and a parked car.

The stabbing victim, who police declined to identify, was driven to Southside Hospital

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and was listed in serious condition. Second Squad Det. Sgt. Thomas Groneman said the teen had a severed tendon and nerves and needed surgery.

The sword or machete had gone "completely through his arm," Groneman said. Source: http://www.newsday.com/news/local/longisland/ny-libren0504,0,7126556,print.story

<u>Probability of Future Events:</u> In Islip, Civil Unrest, as a consequence of another disaster, or due to gangs, could occur.

<u>Cascading Effects:</u> In the case highlighted above, gunshots were fired in close proximity to a school. Other effects of civil unrest could be fire, explosion or disruption of governmental and or private business.

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FOOD SHORTAGE: 128, Low Hazard

<u>Potential Impact:</u> Throughout a Large Region

Cascade Effects: Some Potential

Civil Unrest

Frequency: A Rare Event

Onset: Several Days Warning
Hazard Duration: Four days to One Week
Three Days to One Week
Impact(Detailed information indicated below):

- Serious Injury or Death Unlikely
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion</u>: Since Long Island food supplies depends mainly on transportation from outside sources, an interruption in this system could produce this hazard. It is expected that this hazard would only occur as a cascading effect of another hazard such as a Hurricane, Winter Storm, Earthquake or terrorist incident.

<u>Hazard Description:</u> A situation where the normal distribution pattern and/or the timely delivery of foodstuffs to retail establishments is disrupted so that the public is impacted.

<u>Geographic Location/Area(s) Affected:</u> All of Islip Town would be affected during a food shortage.

Extent (magnitude or severity) of Hazard: This hazard should only occur as a cascading effect of another hazard.

<u>Historical Description of Previous Occurrences:</u> There is no record of this hazard occurring in Islip Town.

<u>Probability of Future Events:</u> This hazard should only occur as a cascading effect of another hazard.

Cascading Effects: Some potential for Civil Unrest.

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RADIOLOGICAL (IN TRANSIT): 114, Low Hazard

Potential Impact: Single Location Cascade Effects: Some Potential

Water Supply Contamination

Frequency: A Rare Event No Warning

Hazard Duration: Less Than One Day Less Than One Day

<u>Impact(Detailed information indicated below):</u>

- Serious Injury or Death Unlikely
- Little or No Damage to Private Property
- Little or No Structural Damage to Public Facilities

<u>Risk Assessment Discussion</u>: Since only low level radiological material is transported through Islip, there should be very little risk from this hazard, unless it is a cascade effect from a Terrorist incident.

<u>Hazard Description:</u> A radiological release in transit is defined as a release or threat of release of radioactive material from a transportation vehicle including truck, rail, air, and marine vehicle.

<u>Geographic Location/Area(s) Affected:</u> This hazard could affect any area of Islip Town, but primarily on major transportation routes.

Extent (magnitude or severity) of Hazard: Under normal circumstances, the extent of this hazard should be minor and consist of removing intact packages from roadways. There should not be an actual release of radiological material. The exception to this would be a deliberate release of material in a Terrorist incident.

<u>Historical Description of Previous Occurrences:</u> There is no record of radiological materials being released as a result of an In-transit accident.

<u>Probability of Future Events:</u> There is some possibility that this hazard could occur, since materials are transported through Islip Town.

<u>Cascading Effects:</u> There is a slight risk of groundwater contamination from a release of material.

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HAZARDS THAT OCCUR WITH NO WARNING*

HAZMAT (FIXED SITE)

FIRE

TERRORISM

HAZMAT (IN TRANSIT)

UTILITY FAILURE

TORNADO

WILDFIRE

TRANS ACCIDENT

EXPLOSION

OIL SPILL

WATER SUPPLY CONTAMINATION

EARTHQUAKE

STRUCTURAL COLLAPSE

RADIOLOGICAL (IN TRANSIT)

HAZARDS THAT OCCUR MOST

OFTEN*

FLOOD

FIRE

SEVERE STORM

OIL SPILL

HAZARDS THAT PRESENT THE GREATEST THREAT TO LIFE*

TERRORISM

*Serious injury and death in large or extremely large numbers was selected from the Impact

^{*}No warning was selected from the Onset Tab.

^{*}A frequent event was selected on frequency Tab.

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IV. Mitigation Strategy

Mitigation Strategies proposed by this plan follow FEMA categories and are consistent with goals outlined in the New York State Hazard Mitigation Program from the New York State Emergency Management Office (SEMO).

Based on the analysis performed by the Planning Committee, the moderately low and low ranking hazards were discussed in the report, but only moderately high ranking hazards were profiled completely. Where appropriate however, moderately low and low ranking hazards were included in mitigation planning.

Recommendations for mitigation were submitted by members of the planning committee through the Town of Islip Department of Planning and Development.

According to FEMA, mitigation actions can be grouped into six broad categories. These are the categories that will be used to identify mitigation measures for Islip Town:

- **1. Prevention.** Government administrative or regulatory actions or processes that influence construction and land development. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, in particular for sensitive areas, building codes, capital improvement programs, open space preservation, and storm water management regulations.
- **2. Property Protection.** Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits and barriers of barriers such as storm shutters, shatter-resistant glass.
- **3. Public Education and Awareness.** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- **4. Natural Resource Protection.** Actions that, in addition to minimizing hazard losses also preserve or restore the functions of natural systems. These actions include erosion and sediment control, stream corridor restoration, watershed management, implementation of best management practices (BMP's), forest and vegetation management, and wetland restoration and preservation.
- **5. Emergency Services.** Actions that protect people and property during and immediately after a disaster or hazard event. Services include hazard threat recognition, warning systems, emergency response services, and protection of critical facilities.

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6. Structural Projects. Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, channel maintenance and safe rooms or shelters.

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The Goals of the New York State Hazard Mitigation Program are as follows:

CUSTOMERS

Promote hazard mitigation awareness and education throughout the State.

SERVICES

Build a State and local hazard mitigation infrastructure within the State and promote mitigation as the most effective means to reduce future disaster losses.

Implement, maintain, and update a comprehensive State Multi-Hazard Mitigation Plan.

Reduce risk to lives and property from frequent natural, technological and human caused disasters. Set priority on hazards that are repetitive and pose severe risk to life and property.

Promote the implementation of flood mitigation plans and projects in flood prone areas of the State, in accordance with the FMA program.

Encourage the development and implementation of long-term, cost-effective and environmentally sound mitigation projects at the local level.

Organize a hazard mitigation outreach and education effort at the State level.

Promote Hazard Resistant Construction, especially in single family residential buildings throughout the State

Ensure hurricane safety for the people and infrastructure of southern NY State.

Ensure earthquake safety for the people, property and infrastructure of NYS.

Reduce the risks of wildfire and utility failure resulting from damaged trees.

Reduce the length of utility "downtimes".

ADMINISTRATION

Ensure adequate administrative support to enable SEMO hazard mitigation staff to meet their goals and objectives in a professional and efficient manner.

LEGISLATION

Track, and/or recommend, Federal, State and local legislation related to hazard mitigation.

Source:http://www.semo.state.nv.us/programs/planning/cemp/mitigation_strategy.pdf

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Goals and Objectives:

- a. The Goals for this mitigation plan are:
 - i. Minimize injury and loss of life from hazards.
 - ii. Minimize losses to existing and future structures within hazard areas.
 - iii. Protect natural resources, such as open space, drinking water, recreation and fin and shellfish fisheries from hazards.
 - iv. Protect cultural resources such as historic structures and museums from hazards.
 - v. Provide for Continuity of Government (COG) and Continuity of Government (COOP) during and in the aftermath of disasters in order to minimize negative impact from events.
- b. The Objectives to accomplish these goals are:
 - i. Increase awareness in Islip Town Government for hazards that may occur within the Town and put in place measures that will enable the Town to continue to operate during and in the aftermath of disasters.
 - ii. Increase public awareness of hazards in order to gain participation from the public for hazard mitigation.
 - iii. Reduce the impact on the community from storms that cause flooding, damaging winds and ice.
 - iv. Reduce the damage caused by fire.
 - v. Reduce the threat of terrorism.
 - vi. Reduce the risk of extreme temperatures to the public.
 - vii. Reduce the risk of damage from earthquakes.
 - viii. Prevent the spread of infestation.
 - ix. Reduce the damage from drought.
 - x. Reduce the risk of epidemic in the community.
 - xi. Reduce the risk of soil, water and air contamination from petroleum and HAZMAT releases.
 - xii. Reduce the risk of utility failure.

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xiii. Reduce the risk of a transportation accident.

xiv. Reduce the risk of structural collapse.

xv. Increase public security and reduce the threat of civil unrest.

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Range of Actions Considered: The following section lists all the Mitigation Strategies, Actions and Responsibilities received from the committee and the public.

Continuity of Government (COG) Continuity of Operations (COOP)

Continuity of Government (COG) and Continuity of Operations (COOP) are important aspects of hazard mitigation. This means that that Islip Town Government must continue to operate in an efficient and responsive manner during and after disaster events in order to protect life and property and minimize potential for cascading effects.

Mitigation Strategy	Action	Responsibility
Prevention	Perform an inventory and maintain a list of all items, including records that would have to be removed from Town Facilities and Town Hall and Annex if flooding or storm surge is expected to inundate structures. Plan where these items and records would be relocated.	Affected Town Departments
	Update and test the Town Emergency Operation Plan regarding relocation of items and records.	Islip Emergency Management in conjunction with affected Town Departments
Property Protection	Wherever possible, retrofit Islip Town facilities to take into consideration potential impact of moderately high hazards (flood/ wind/ fire/ terrorism)	Islip Emergency Management in conjunction with affected Town Departments
Public Education and Awareness	Continue to provide all-hazard information for the general public through the use of the Town website and print media	Islip Emergency Management, Town Supervisor's Office and IT
Natural Resource Protection	NA	NA

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Mitigation Strategy	Action	Responsibility
Emergency Services	Insure that COOP and COG plans are in place and tested	Islip Emergency Management
	Purchase portable equipment to enable interagency communication between Town of Islip and external governmental and NGO (non-Governmental Organization) agencies.	Islip Emergency Management
	Upgrade Islip Town computer system to use Microsoft Office Products, enabling better interagency communication with other governmental and NGO (non-Governmental Organization) agencies.	Islip Town Supervisor's Office
	Purchase a crisis management software package to assist with organizing emergency disaster response in EOC (Emergency Operations center).	Islip Emergency Management
Structural projects	Construct EOC/ OPS (Emergency Operations Center / Operations) center at Long Island Islip MacArthur Airport to provide for alternate seat for Town Government outside of the flood plain and storm surge area.	Islip Emergency Management/ Planning and Public Works Departments/ Islip Town Supervisor's office
	Insure that construction of all new governmental facilities for Islip takes in consideration the potential impact of moderately high hazards (flood/ wind/ fire/ terrorism)	Islip Emergency Management in conjunction with affected Town Departments

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High Ranking Hazards

FLOODING: Flooding is a serious threat from storms in Islip Town. Three areas of major flooding are; coastal flooding (tidal, storm surge and wave action), flooding due to location within a floodplain and excess storm water. In addition, Fire Island, a barrier island, is subject to coastal flooding including; tidal inundation, storm surge and wave action from Great South Bay and/ or the Atlantic Ocean.

Mitigation Strategy	Action	Responsibility
Prevention	Provide for regular inspections of storm systems and clearing of storm drains, culverts and natural stream beds to insure reduce flooding from storm water runoff.	Islip Public Works
	Continue Fire Island- Beach Fill Projects- scraping sand and rebuilding dunes for protection from waves and storm surge.	Fire Island Erosion Control Taxing Districts
	Eliminate Potential Flooding Problems in new commercial applications by examination of groundwater data.	Islip Planning Department, Building Division
	Revaluate possibility of beach nourishment program to prevent breaches on Fire Island during storms.	Town of Islip Emergency Management and Planning Departments with U.S. Army Corps of Engineers, NYS and Suffolk County
Property Protection	Assist critical care facilities such as hospitals and nursing homes that need to shelter-in-place with relocating generators, electrical and computer equipment and "hardening" facility i.e. shatter resistant glazing for windows. Participating in AHMP:	Individual Facility with assistance from government and private funding
	Good Samaritan Hospital Elevate Primary Power Generators Primary Power Generator Architectural / Engineering Fee Window Replacement	
	Our Lady of Consolation Nursing and Rehabilitative Care Center Elevate generator and switching boxes	

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Mitigation Strategy	Action	Responsibility
	Storm Shutters for Windows	
	Southside Hospital TB Submitted to Committee	
	Encourage retrofit of homes in flood prone areas. For example, elevate homes subject to repeated inundation, especially on Fire Island. Gerard Stoddard of the Fire Island Association provided an estimate that it would cost approximately \$40,000 per building.	Recommended by Fire Island Association/ assistance from public and private funding
	Provide wet/dry flood proofing assistance to homeowners with repeated basement flooding due to storms.	Islip Public Works/ Engineering Assistance from private and public funding
	Consider dewatering projects for areas with repetitive basement flooding due to rise in groundwater (i.e. Bishop's Lane/ Lake Hills—approx 50 homes)	Islip Public Works/ Engineering
	Encourage homeowners to fill in basements to a point higher than historic groundwater levels to eliminate repetitive basement flooding problems. (i.e. Bishop's Lane/ Lake Hills—approx 50 homes) This may be accomplished through an assessment consideration	Islip Public Works/ Engineering and Islip Town Board
	Encourage homeowners to eliminate basements in homes with repetitive basement flooding due to rise in groundwater (i.e. Bishop's Lane/ Lake Hills—approx 50 homes). This may be accomplished through an assessment consideration.	Islip Public Works/ Engineering and Islip Town Board
	Consider raising homes to bring first floor above anticipated flood level.	Islip Public Works/ Engineering and Islip Town Board
	Consider relocation of houses subject to repetitive flooding due to rise in groundwater (i.e. Bishop's Lane/ Lake Hills—approx 50 homes).	Islip Public Works/ Engineering and Islip Town Board

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Mitigation Strategy	Action	Responsibility
	Consider purchase of properties subject to repetitive flooding (i.e. Bishop's Lane/ Lake Hills—approx 50 homes).	Islip Town Board
	Evaluate potential of damage to cultural facilities in FIRM and SLOSH areas i.e. Brookwood Hall and Islip Art Museum	Islip Department of Parks, Recreation and Cultural Affairs
Public Education and Awareness	Increase public awareness of storm hazards and how to reduce injury and property damage. Provide outreach for vulnerable populations, such as residents of trailer parks and households where English is a second language.	Islip Emergency Management
Natural Resource Protection	Insure that streams and river are free of debris that impedes flow, especially where they flow under roads.	Islip Public Works
Emergency Services	Update and test components of the coastal evacuation plan. Insure that critical roadways will not be subject to inundation.	Islip Emergency Management and FILES (Fire Island Law Enforcement/ Security Council)
Structural projects	Roadway drainage improvement for flood mitigation, projects on line for 2006- 2009: • 64 Sherman Ave, West Islip • 633 Alwick Avenue, West Islip • Gunther/ Jefferson, Bay Shore • Koral Avenue/ 3 rd Ave., Bay Shore • 92 Hanson Place, Ronkonkoma • 315/319 Oakwood Avenue, West Islip • 1 Charles Ave, Islip Terrace • 278 Laverne Avenue, Holbrook • Chestnut Ave. and Wilson Blvd., C Islip • 400 Cedar Avenue, Islip • 1609 9 th Avenue, Bohemia • Grant Avenue, Islip	Islip DPW, Islip Engineering Division and Islip Planning Commission
	Inspect all Bulkheads owned by Islip Town and replace if necessary.	Division and Recreation, Parks and Cultural Affairs Dept.

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<u>WIND:</u> Wind damage is a hazard, second only to flooding. Wind damage occurs from severe storms, Nor'easters, hurricanes and tornados

Mitigation Strategy	Action	Responsibility
Prevention	Code enforcement. Insure the building code is enforced for all construction projects, pre and post disaster, especially with regard to wind speed. According to the New York State department of State, wind speed design for Islip Town is between 110 and 120 miles per hour.	Islip Code Enforcement
	Perform a structural review of windloading for Town Buildings and structures.	Islip Public Works/ Engineering Division
	Recommend to other governmental, NGO (Non-governmental Organization) and commercial entities that a structural review of windloading be conducted on buildings in Islip Town. This would be especially important for multistory buildings such as the hospitals, federal court and office buildings.	Town Supervisor's Office.
Property Protection	Insure that dead trees and branches near electric service for critical care facilities are removed or pruned back to reduce the possibility for interruption of service.	Critical care facilities, LIPA and Islip Department of Public Works
	Insure that dead trees and branches near electric service for Islip Town facilities and infrastructure are removed or pruned back to reduce the possibility for interruption of service.	Islip Public Works/ Building Division/ Engineering Division and LIPA
Public Education and Awareness	Increase public awareness of storm hazards and how to reduce injury and property damage. Provide outreach for vulnerable populations, such as residents of trailer parks and households where English is a second language.	Islip Emergency Management
Natural Resource Protection	NA	NA
Emergency Services	Work with trailer parks to insure evacuation of residents when high winds are expected	Islip Emergency Management

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Mitigation Strategy	Action	Responsibility
Structural projects	NA	NA

<u>ICE STORMS:</u> Damage from ice storms can lead to motor vehicle accidents and personal injury. A serious cascading effect could be a utility failure.

Mitigation Strategy	Action	Responsibility
Prevention	Insure that branches are pruned away from electric and telephone wires and dead standing trees are removed where they may fall on wires.	Islip Public Works and LIPA
Property Protection	Insure that salt and sand are stockpiled for icing events.	Islip Public Works
Public Education and Awareness	Increase public awareness of hazards from ice storms through the Islip Town Website and publications.	Islip Emergency Management
Natural Resource Protection	Insure that injurious amounts of salt and sand do not wash into environmentally sensitive areas.	Islip Public Works
	Purchase sand dome for salt/sand storage at Long island MacArthur Airport \$145,000	Long Island MacArthur Airport
Emergency Services	Insure that roadways are cleared and salted in an efficient manner	Islip Public Works
Structural projects	Encourage placing utilities underground in future subdivisions to reduce damage from ice storms.	Islip Planning Commission

FIRE: An evaluation of deaths from fire in 2004 shows that Islip was slightly above the average for New York State, but below the national average. Although this may prove to be an unusual event, fire prevention and safety is an important consideration for the health and well-being of the community:

Mitigation Strategy	Action	Responsibility
Prevention	Continue to enforce codes and regulations regarding construction and building occupancy.	Islip Department of Code Enforcement
Property Protection	Insure that all Town buildings are in compliance with fire code and that fire protection is in place and operational.	Islip Planning Department, Building Division

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Public Education and Awareness	Increase public awareness of fire prevention and safety. Continue outreach to vulnerable population including the elderly, disabled, economically disadvantaged and households where English may be a second language. Fund private organizations to further enhance outreach to vulnerable populations.	Islip Public Safety, Volunteer Fire Departments, and ambulance corps. Islip Town Board
Natural Resource Protection	NA	NA
Emergency Services	NA	NA
Structural projects	Encourage use of additional fire resistant construction measures for new construction and retrofit.	Islip Building Division/ Islip Division of Engineering

TERRORISM: Reducing the threat of terrorism is an important factor in public safety and community well-being.

Mitigation Strategy	Action	Responsibility
Prevention		
Property Protection	Purchase Emergency Generator for the Long Island McArthur Airport Terminal Building. \$1,000,000	Long Island MacArthur Airport
	Purchase sprinkler system for Long Island McArthur Airport Terminal Building. 1,300,000	Long Island MacArthur Airport
	Purchase in-line baggage handling system equipped with explosive device detection system. 3,000,000	Long Island MacArthur Airport
	Install surveillance cameras and security gates on DPW heavy equipment and fueling facilities.	Islip Public Works
Public Education and	Increase public awareness of Terrorism	Islip Emergency
Awareness	Hazard. "If you see something, say something".	Management
Natural Resource Protection	NA	NA

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Mitigation Strategy	Action	Responsibility
Emergency Services	Purchase Emergency Equipment to Enhance Response capability:	Long Island MacArthur Airport
	Oshkosh ARFF Vehicle-1500 series for aircraft firefighting \$790,000	
	Upgrade communications equipment for emergency response at Long Island MacArthur Airport \$100,000	
	Purchase Self Contained Breathing Apparatus for Fire Rescue 15 units at \$5,000 each= \$75,000	
Structural projects	Install Blast Fence and RON (remain overnight) fence slats \$500,000	Long Island MacArthur Airport

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Moderately Low Ranking Hazards

WILDFIRE: Reduce the Risk of Wildfire

Mitigation Strategy	Action	Responsibility
Prevention	Train a cadre of Park and Nature center	Islip Emergency
	employees in wildland fire prevention	Management/
	and basic fire fighting.	NYSDEC Forest
		Rangers
Property Protection	Provide basic equipment for nature	Islip Emergency
	center and parks (Indian Pumps/ fire	Management
	broom/ flapper for small spot fires.	
Public Education and	Provide information to the public on	Parks, Recreation and
Awareness	wildfire prevention.	Cultural Affairs
		Department
Natural Resource Protection	NA	NA
Emergency Services	NA	NA
Structural projects	NA	NA

TEMPERATURE EXTREMES: Reduce the Risk of Extreme temperature to the Public

Mitigation Strategy	Action	Responsibility
Prevention	NA	NA
Property Protection	Insure that all Islip Town facilities have back up power generation or have a system in place to prevent pipes from freezing during a power outage.	Islip Emergency Management, Islip Public Works and Planning Department; Engineering Division
Public Education and Awareness	Provide information to the public on the danger of heat and cold emergencies and where shelters will be located.	Islip Emergency Management and Department of Human Services
Natural Resource Protection	NA	NA
Emergency Services	Open emergency shelters when necessary (heat or cold emergencies)	Islip Emergency Management
Structural projects	Install backup power generators for shelters that would be used for heat and cold weather emergencies.	Islip Public Works/ Planning Department; Engineering Division

EARTHQUAKE: Reduce the risk of damage from future earthquakes and tsunamis.

Mitigation Strategy	Action	Responsibility
Prevention	NA	NA
Property Protection	Review Current Town Building Code with regard to HAZUS model of 1884 Earthquake.	Islip Planning Department; Engineering Division

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Mitigation Strategy	Action	Responsibility
Public Education and	Provide information on earthquake	Islip Emergency
Awareness	safety to the public.	management
Natural Resource Protection	NA	NA
Emergency Services	Insure that there is a provision for earthquake hazards in the Islip Town Emergency Operation Plan.	Islip Emergency Management
Structural projects	Insure that all future construction projects for Islip Town are in compliance with earthquake hazard requirements.	Islip Public Works/ Planning Department; Engineering Division

INFESTATION: Prevent the spread of the ALB infestation.

Mitigation Strategy	Action	Responsibility
Prevention	NA	NA
Property Protection	NA	NA
Public Education and Awareness	Continue to work with the USDA to educate the public.	Islip Emergency Management
Natural Resource Protection	Insure that wood or wood products from USDA Quarantine area are not removed and used for projects in other areas.	All Town Departments
Emergency Services	NA	NA
Structural projects	NA	NA

DROUGHT: Reduce the damage from drought.

Mitigation Strategy	Action	Responsibility
Prevention	Employ water conservation measures	All Town departments
	for all Islip Town buildings and grounds.	
Property Protection	Encourage the use of drought resistant	Islip Department of
	plants for Islip Town Plantings.	Parks, recreation and
		Cultural Affairs
Public Education and	NA	NA
Awareness		
Natural Resource Protection	NA	NA
Emergency Services	NA	NA
Structural projects	NA	NA

EPIDEMIC: Reduce the risk of epidemic in the community. (Currently West Nile Virus and Lyme disease) Prevent the spread of rabies to Islip Town.

Mitigation Strategy	Action	Responsibility
Prevention	Continue to hold the annual rabies	Islip Animal Shelter,
	vaccination clinic for pets.	Suffolk County

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Mitigation Strategy	Action	Responsibility
		Department of Health services and Suffolk County Society for the Prevention of cruelty to
		Animals (SCSPCA)
Property Protection	NA	NA
Public Education and Awareness	Continue to utilize Islip Town website and printed materials to educate the public about West Nile Virus, Lyme Disease and rabies.	Islip Emergency Management, Animal Shelter and Parks, recreation and Cultural Affairs Department
Natural Resource Protection	NA	NA
Emergency Services	Work with Suffolk County Health Department on PODs. (Point of Distribution)	Islip Emergency Management
Structural projects	NA	NA

OIL SPILL/ HAZMAT: Reduce the risk of soil, water and air contamination from petroleum and HAZMAT releases.

Mitigation Strategy	Action	Responsibility
Prevention	NA	NA
Property Protection	NA	NA
Public Education and Awareness	Continue program for placing "Drains to Bay" medallions on storm drains.	Islip Public Works and Planning
	Use Islip Town website and print material to encourage recycling of waste oil and other recyclables. Continue "STOP" program (Stop throwing out pollutants).	Islip Department of Environmental Control
Natural Resource Protection	NA	NA
Emergency Services	Upgrade decontamination supplies and equipment.	Islip Town Department of Aviation and transportation, Hazardous Materials Team
Structural projects	NA	NA

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<u>UTILITY FAILURE:</u> To reduce the risk of utility failure.

Mitigation Strategy	Action	Responsibility
Prevention	Reduce the number of trees that are in	Islip DPW and LIPA
	conflict with overhead utilities.	
Property Protection	Insure that surge protection is in place	Islip Planning
	for all electric and electronic equipment	Department, Building
	in Town facilities and buildings.	Division
Public Education and	Use Islip Town website and print	Islip Emergency
Awareness	materials to educate the public on	Management
	safety during utility failure.	
Natural Resource Protection	NA	NA
Emergency Services	NA	NA
Structural projects	NA	NA

TRANSPORTATION ACCIDENT: To reduce the risk of a transportation accident

Mitigation Strategy	Action	Responsibility
Prevention	Insure that all Islip Town employees are	Islip Emergency
	aware of the dangers at rail road grade	Management
	crossings.	
Property Protection	NA	NA
Public Education and	Continue to educate the public about	Islip Emergency
Awareness	the dangers at grade crossings.	Management
Natural Resource Protection	NA	NA
Emergency Services	Optical Preemption Signal- Town wide	Islip DPW
Structural projects	Traffic Safety projects (10):	Islip DPW
	 Intersection improvements 	
	Turn Lanes	
	 Community Islands and Dividers 	
	 Roadway Reconstruction 	
	 Traffic Signal Improvements 	
	Traffic Calming	

STRUCTURAL COLLAPSE: To reduce the risk of structural collapse

Mitigation Strategy	Action	Responsibility			
Prevention	Continue to collect data regarding past	Islip Emergency			
	events and analyze potential future	Management			
	events.				
Property Protection	Inspect all Islip Town buildings and	Islip Planning			
	facilities to insure their structural				
	soundness.	Engineering Division			
Public Education and	Use the Town website and print	Islip Emergency			
Awareness	material to educate the public to the	Management and			

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Mitigation Strategy	Action	Responsibility			
	danger of construction that does not comply with code and the necessity to obtain building permits and certificates of occupancy.	Planning Department, Code Enforcement			
Natural Resource Protection	NA	NA			
Emergency Services	NA	NA			
Structural projects	Insure that All construction in Islip Town is to code.	Islip Planning Department, Code Enforcement			

<u>CIVIL UNREST:</u> Increase public security and reduce the threat of civil unrest.

Mitigation Strategy	Action	Responsibility				
Prevention	Continue to provide an opportunity for the public to voice their opinions	Islip Town Board and				
	Supervisor's office/ All Islip Town					
	through open, public meetings and					
	timely response to citizen inquiries.	Departments				
Property Protection	NA	NA				
Public Education and	Provide educational and recreational	Islip Department of				
Awareness	opportunities for at-risk youth to counter	Parks, Recreation and				
	the beliefs, rituals and habits of gang	Cultural Affairs/				
	culture.	Department of Human				
		Services, Youth				
		Bureau				
Natural Resource Protection	NA	NA				
Emergency Services	NA	NA				
Structural projects	NA	NA				

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Analysis of Mitigation Actions:

There are many ways to develop and apply evaluation criteria. One method enables the planning team to consider in a systematic way the **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental (STAPLEE) opportunities and constraints of implementing a particular mitigation action in your jurisdiction.

- 1. **S**ocial: Is the action socially acceptable (is it compatible with present and future community values)?
- 2. **T**echnical: Is the measure technically feasible?
- 3. Administrative: Does the community have the capability to implement and maintain the action?
- 4. **P**olitical: Is there public support both to implement and maintain the action?
- 5. Legal: Does the community have the authority to implement the proposed action?
- 6. Economic: Is the action cost-effective?
- 7. Environmental: Does this action affect the environment (land/ water/endangered species?

Each proposed mitigation measure was analyzed according to these criteria. After analysis, those mitigation plans which were deemed to have the best cost/ benefit for the community will be those which have the highest priority for implementation. The committee met on Wednesday, 27 June to discuss the mitigation measures and Perform a STAPLEE analysis. A "Y" means the mitigation measure has a positive or neutral impact on the criteria. An "N" means the mitigation measure has a negative impact on the criteria. The results are below:

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	S	Т	Α	Р	L	Е	Е	Acceptable Y or N
COG and COOP								1 OI IN
Perform an inventory and maintain a list of all items, including records that would have to be removed from Town Facilities and Town Hall and Annex if flooding or storm surge is expected to inundate structures. Plan where these items and records would be relocated.	Y	Y	Y	Y	Y	Y	Y	Y
Update and test the Town Emergency Operation Plan regarding relocation of items and records	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Wherever possible, retrofit Islip Town facilities to take into consideration potential impact of moderately high hazards (flood/ wind/ fire/ terrorism)	Y	Y	Y	Υ	Y	Y	Υ	Y
Continue to provide all-hazard information for the general public through the use of the Town website and print media	Υ	Υ	Υ	Υ	Υ	Y	Υ	Y
Insure that COOP and COG plans are in place and tested.	Υ	Υ	Υ	Υ	Υ	Y	Υ	Y
Purchase portable equipment to enable interagency communication between Town of Islip and external governmental and NGO (non-Governmental Organization) agencies.	Υ	Y	Υ	Υ	Y	Y	Υ	Y
Upgrade Islip Town computer system to use Microsoft Office Products, enabling better interagency communication with other governmental and NGO (non-Governmental Organization) agencies.	Y	Y	Y	Y	Y	Y	Y	Y
Purchase a crisis management software package to assist with organizing emergency disaster response in EOC (Emergency Operations Center).	Υ	Y	Y	Υ	Y	Y	Υ	Y
Construct EOC/ OPS (Emergency Operations Center / Operations) center at Long Island Islip MacArthur Airport to provide for alternate seat for Town Government outside of the flood plain and storm surge area.	Y	Y	Y	Y	Y	Y	Y	Y
Insure that construction of all new governmental facilities for Islip takes in consideration the potential impact of moderately high hazards. (flood/ wind/ fire/ terrorism)	Υ	Υ	Y	Υ	Υ	Y	Y	Y
FLOODING		\ , ·	\ , <i>i</i>	, ,	\ , ·	\ , <i>,</i>		
Provide for regular inspections of storm systems and clearing of storm drains, culverts and natural stream beds to insure reduce flooding from storm water runoff.	Y	Y	Y	Y	Y	Y	Y	Y
Continue Fire Island- Beach Fill Projects- scraping sand and rebuilding dunes for protection from waves and storm surge.	Υ	Υ	Υ	Υ	Υ	Y	Υ	Y
Eliminate Potential Flooding Problems in new commercial applications by examination of groundwater data.	Υ	Υ	Y	Υ	Υ	Y	Y	Y

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Revaluate possibility of beach nourishment program to prevent breaches on Fire Island during storms.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Assist critical care facilities such as hospitals and nursing homes that need to shelter-in-place with relocating generators, electrical and computer equipment and "hardening" facility i.e. shatter resistant glazing for windows. Participating in AHMP: Good Samaritan Hospital Consolation Nursing Home Southside Hospital	Y	Y	Y	Υ	Υ	Y	Υ	Y
Encourage retrofit of homes in flood prone areas. For example, elevate homes subject to repeated inundation, especially on Fire Island. Gerard Stoddard of the Fire Island Association provided an estimate that it would cost approximately \$40,000 per building.	Y	Y	Y	Y	Y	Y	Y	Y
Provide wet/dry flood proofing assistance to homeowners with repeated basement flooding due to storms.	Υ	Y	Y	Υ	Υ	Υ	Y	Y
Consider dewatering projects for areas with repetitive basement flooding due to rise in groundwater (i.e. Bishop's Lane/ Lake Hills—approx 50 homes).	Y	Y	Y	Y	Y	N	Z	N
Encourage homeowners to fill in basements to a point higher than historic groundwater levels to eliminate repetitive basement flooding problems. (i.e. Bishop's Lane/ Lake Hills—approx 50 homes) This may be accomplished through an assessment consideration.	Υ	Y	Y	Y	Y	Y	Y	Y
Encourage homeowners to eliminate basements in homes with repetitive basement flooding due to rise in groundwater (i.e. Bishop's Lane/ Lake Hills—approx 50 homes). This may be accomplished through an assessment consideration.	Y	Y	Y	Y	Y	Y	Y	Y
Consider raising homes to bring first floor above anticipated flood level.	N	Υ	N	N	N	N	Υ	N
Consider relocation of houses subject to repetitive flooding due to rise in groundwater (i.e. Bishop's Lane/ Lake Hills—approx 50 homes).	N	Υ	N	N	N	N	Υ	N
Consider purchase of properties subject to repetitive flooding (i.e. Bishop's Lane/ Lake Hills—approx 50 homes).	N	Y	N	N	N	N	Y	N
Evaluate potential of damage to cultural facilities in FIRM and SLOSH areas i.e. Brookwood Hall and Islip Art Museum.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Increase public awareness of storm hazards and how to reduce injury and property damage. Provide outreach for vulnerable populations,	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y

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such as residents of trailer parks and households where English is a second language.								
Insure that streams and river are free of debris that impedes flow, especially where they flow under roads.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Update and test components of the coastal evacuation plan. Insure that critical roadways will not be subject to inundation.	Υ	Υ	Y	Υ	Υ	Υ	Y	Y
Roadway drainage improvement for flood mitigation, projects on line for 2006- 2009:	Y	Y	Y	Y	Y	Y	Y	Y
Inspect all Bulkheads owned by Islip Town and replace if necessary.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
WIND								
Code enforcement. Insure the building code is enforced for all construction projects, pre and post disaster, especially with regard to wind speed. According to the New York State department of State, wind speed design for Islip Town is between 110 and 120 miles per hour.	Y	Y	Y	Y	Y	Y	Y	Y
Perform a structural review of windloading for Town Buildings and structures.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Recommend to other governmental, NGO (Non-governmental organization) and commercial entities that a structural review of windloading be conducted on buildings in Islip Town. This would be especially important for multistory buildings such as the hospitals, federal court and office buildings.	Υ	Υ	Y	Y	Υ	Y	Υ	Y
Insure that dead trees and branches near electric service for critical care facilities are removed or pruned back to reduce the possibility for interruption of service.	Y	Υ	Y	Υ	Υ	Υ	Y	Y
Insure that dead trees and branches near electric service for Islip Town facilities and infrastructure are removed or pruned back to reduce the possibility for interruption of service.	Y	Y	Y	Y	Y	Y	Y	Y
Increase public awareness of storm hazards and how to reduce injury and property damage. Provide outreach for vulnerable populations,	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y

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such as residents of trailer parks and								. 0, 14
households where English is a second								
language.								
Work with trailer parks to insure evacuation of	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
residents when high winds are expected								
ICE STORMS								
Insure that branches are pruned away from	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
electric and telephone wires and dead standing								
trees are removed where they may fall on wires.								
Insure that salt and sand are stockpiled for icing	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
events.								
Increase public awareness of hazards from ice	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
storms through the Islip Town Website and								
publications.						.,	.,	
Insure that injurious amounts of salt and sand	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
do not wash into environmentally sensitive								
areas.						.,		
Purchase sand dome for salt/sand storage at	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Long island MacArthur Airport \$145,000.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
Insure that roadways are cleared and salted in an efficient manner.	Y	Y	Y	Y	Y	Y	Y	Y
Encourage placing utilities underground in future	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
subdivisions to reduce damage from ice storms.	Ť	ľ	ľ	T	ľ	ľ	T	ĭ
FIRE								
Continue to enforce codes and regulations	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
regarding construction and building occupancy.	I	'	I	ı	ı	ı	ı	ı
Insure that all Town buildings are in compliance	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
with fire code and that fire protection is in place		•						•
and operational.								
Increase public awareness of fire prevention	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
and safety. Continue outreach to vulnerable	•	-	-			_	•	•
population including the elderly, disabled,								
economically disadvantaged and households								
where English may be a second language.								
Fund private organizations to further enhance	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
outreach to vulnerable populations.								
Encourage use of additional fire resistant	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
construction measures for new construction and								
retrofit.								
TERRORISM								
Purchase Emergency Generator for the Long	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Island McArthur Airport Terminal Building.								
\$1,000,000				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
Purchase sprinkler system for Long Island	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
McArthur Airport Terminal Building. \$1,300,000	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Purchase in-line baggage handling system	Y	Y	Y	ľ	ľ	ľ	ľ	Y
equipped with explosive device detection								
system. \$3,000,000	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Install surveillance cameras and security gates	ľ	1	Ť	ľ	ľ	1	ľ	ĭ
on DPW heavy equipment and fueling facilities.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Increase public awareness of Terrorism Hazard.	ľ	ľ	ľ	ľ	Ĭ	ľ	ľ	Ť

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"If you see something, say something".								. 0
Purchase Emergency Equipment to Enhance Response capability:	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
Oshkosh ARFF Vehicle-1500 series for aircraft firefighting								
Upgrade communications equipment for emergency response at Long Island MacArthur Airport \$100,000								
Purchase Self Contained Breathing Apparatus for Fire Rescue 15 units at \$5,000 each= \$75,000								
Install Blast Fence and RON (remain overnight) fence slats \$500,000	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
WILDFIRE								
Train a cadre of Park and Nature center employees in wildland fire prevention and basic fire fighting.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
Provide basic equipment for nature center and parks (Indian Pumps/ fire broom/ flapper for small spot fires.	Υ	Y	Υ	Υ	Υ	Y	Υ	Υ
Provide information to the public on wildfire prevention.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
TEMPERATURE EXTREMES								
Insure that all Islip Town facilities have back up power generation or have a system in place to prevent pipes from freezing during a power outage.	Y	Y	Y	Y	Y	Y	Y	Y
Provide information to the public on the danger of heat and cold emergencies and where shelters will be located.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Open emergency shelters when necessary (heat or cold emergencies)	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Install backup power generators for shelters that would be used for heat and cold weather emergencies.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
<u>EARTHQUAKE</u>								
Review Current Town Building Code with regard to HAZUS model of 1884 Earthquake.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
Provide information on earthquake safety to the public.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
Insure that there is a provision for earthquake hazards in the Islip Town Emergency Operation Plan.	Y	Υ	Υ	Υ	Y	Υ	Υ	Y
Insure that all future construction projects for Islip Town are in compliance with earthquake hazard requirements.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
INFESTATION								
Continue to work with the USDA to educate the public.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y

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								Y or N
Insure that wood or wood products from	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
USDA Quarantine area are not removed and								
used for projects in other areas.								
DROUGHT								
Employ water conservation measures for all Islip	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
Town buildings and grounds.			.,		.,			
Encourage the use of drought resistant plants	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
for Islip Town Plantings.								
<u>EPIDEMIC</u>	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \					\ <u>'</u>
Continue to hold the annual rabies vaccination	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
clinic for pets.	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
Continue to utilize Islip Town website and	Y	Y	Y	Y	Y	Y	Y	Y
printed materials to educate the public about								
West Nile Virus, Lyme Disease and rabies. Work with Suffolk County Health Department on	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
PODs. (Point of Distribution)	ĭ	ľ	ľ	ľ	ľ	T	ľ	ĭ
OIL SPILL/HAZMAT								
Continue program for placing "Drains to Bay"	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
medallions on storm drains.	ı	ı	I	T	I	ī	I	ī
Use Islip Town website and print material to	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
encourage recycling of waste oil and other	ı	'	I	ı	I	ı	'	ı
recyclables. Continue "STOP" program (Stop								
throwing out pollutants).								
Upgrade decontamination supplies and	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
equipment.	'	'	'	'	1	l '	'	'
UTILITY FAILURE								
Reduce the number of trees that are in conflict	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
with overhead utilities.	•	•	•				•	•
Insure that surge protection is in place for all	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
electric and electronic equipment in Town								
facilities and buildings.								
Use Islip Town website and print materials to	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
educate the public on safety during utility failure.								
TRANSPORTATION ACCIDENT								
Insure that all Islip Town employees are aware	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
of the dangers at rail road grade crossings.								
Continue to educate the public about the	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
dangers at grade crossings.								
Optical Preemption Signal- Town wide	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
Traffic Safety projects (10):	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
Intersection improvements								
Turn Lanes								
Community Islands and Dividers								
Roadway Reconstruction To a construction								
Traffic Signal Improvements Traffic Solutions Traffic Signal Improvements								
Traffic Calming Traffic Calming								
STRUCTURAL COLLAPSE				V				\/
Continue to collect data regarding past events	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Y
and analyze potential future events.	\	\	\/	V	V	\ <u>\</u>	V	\ <u>'</u>
Inspect all Islip Town buildings and facilities to	Υ	Υ	Υ	Υ	Υ	Υ	Υ	Υ
insure their structural soundness.	<u> </u>	L						

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Use the Town website and print material to educate the public to the danger of construction that does not comply with code and the necessity to obtain building permits and certificates of occupancy.	Y	Y	Y	Υ	Υ	Υ	Υ	Y
Insure that All construction in Islip Town is to code.	Υ	Υ	Y	Υ	Y	Y	Υ	Υ
CIVIL UNREST								
Continue to provide an opportunity for the public to voice their opinions through open, public meetings and timely response to citizen inquiries.	Υ	Y	Y	Y	Y	Υ	Y	Y
Provide educational and recreational opportunities for at-risk youth to counter the beliefs, rituals and habits of gang culture.	Υ	Y	Y	Υ	Y	Y	Y	Y

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3. <u>Implementation Plan: The following are specific projects that have been identified through the STAPLEE evaluation as being acceptable and therefore have the highest priority to meet Hazard Mitigation Goals and Objectives.</u>

Continuity of Government (COG) Continuity of Operations (COOP)

Mitigation Strategy	Action	Responsibility
Prevention	Perform an inventory and maintain a list of all items, including records that would have to be removed from Town Facilities and Town Hall and Annex if flooding or storm surge is expected to inundate structures. Plan where these items and records would be relocated.	Affected Town Departments
	Update and test the Town Emergency Operation Plan regarding relocation of items and records.	Islip Emergency Management in conjunction with affected Town Departments
Property Protection	Wherever possible, retrofit Islip Town facilities to take into consideration potential impact of moderately high hazards (flood/ wind/ fire/ terrorism)	Islip Emergency Management in conjunction with affected Town Departments
Public Education and Awareness	Continue to provide all-hazard information for the general public through the use of the Town website and print media	Islip Emergency Management, Town Supervisor's Office and IT
Emergency Services	Insure that COOP and COG plans are in place and tested	Islip Emergency Management
	Purchase portable equipment to enable interagency communication between Town of Islip and external governmental and NGO (non-Governmental Organization) agencies.	Islip Emergency Management
	Upgrade Islip Town computer system to use Microsoft Office Products, enabling better interagency communication with other governmental and NGO (non-Governmental Organization) agencies.	Islip Town Supervisor's Office
	Purchase a crisis management software package to assist with organizing emergency disaster response in EOC Emergency Operations Center).	Islip Emergency Management

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Mitigation Strategy	Action	Responsibility
Structural projects	Construct EOC/ OPS (Emergency Operations Center / Operations) center at Long Island Islip MacArthur Airport to provide for alternate seat for Town Government outside of the flood plain and storm surge area	Islip Emergency Management/ Planning and Public Works Departments/ Islip Town Supervisor's office
	Insure that construction of all new governmental facilities for Islip takes in consideration the potential impact of moderately high hazards (flood/ wind/ fire/ terrorism)	Islip Emergency Management in conjunction with affected Town Departments

High Ranking Hazards

FLOODING

Mitigation Strategy	Action	Responsibility
Prevention	Provide for regular inspections of storm systems and clearing of storm drains, culverts and natural stream beds to insure reduce flooding from storm water runoff.	Islip Public Works
	Continue Fire Island- Beach Fill Projects- scraping sand and rebuilding dunes	Fire Island Erosion Control Taxing Districts
	Eliminate Potential Flooding Problems in new commercial applications by examination of groundwater data.	Islip Planning Department
	Soil borings only show a snapshot of the groundwater on that given date, the level of groundwater rises and falls in cycles. Therefore, if a system is designed with only two feet to ground water, the system will loose storage capacity when the ground water rises two feet.	
	In an attempt to quell this problem, all applications with ground water 8' below the bottom of the lowest drainage system or sub-floor elevation will be required to submit a map and	

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Mitigation Strategy	Action	Responsibility
	groundwater data. Maps come from http://waterdata.usgs.gov/nwis/ (choose ground water as the category and New York as the geographic area). When provided with this information we can determine if there is a potential for the system to be compromised. Should we determine that the system may be in jeopardy, we can request additional storage volume.	
	Revaluate possibility of beach nourishment program to prevent breaches on Fire Island during storms.	Town of Islip Emergency Management and Planning Departments with U.S. Army Corps of Engineers, NYS and Suffolk County
Property Protection	Assist critical care facilities such as hospitals and nursing homes that need to shelter-in-place with relocating generators, electrical and computer equipment and "hardening" facility i.e. shatter resistant glazing for windows. Participating in AHMP:	Individual Facility with assistance from government and private funding
	Good Samaritan Hospital Elevate Primary Power Generators Install 2 generators on the boiler room roof, to generate primary power. The power generated would be enough to support the entire campus. Estimated Cost: \$ 7.5 million (capital funding or grants) Primary Power Generator Architectural / Engineering Fee	
	Provide architectural and engineering services for the design of the generator service and the building enclosure. Estimated Cost: \$ 750,000 (capital funding or grants) Window Replacement Replace windows with impact resistant glass. The new windows will comply with the wind borne debris building code requirements. Estimated Cost: \$ 1.46 million (capital)	

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Mitigation Strategy	Action	Responsibility
	Our Lady of Consolation Nursing and Rehabilitative Care Center Elevate generator and switching boxes Estimated Cost: \$75,000 to \$90,000 (capital funding or grants) Storm Shutters for Windows Estimated Cost: \$10,000 (capital funding or grants)	
	Southside Hospital TB Submitted to Committee Encourage retrofit of homes in flood	Recommended by Fire
	prone areas. For example, elevate homes subject to repeated inundation, especially on Fire Island. Gerard Stoddard of the Fire Island Association provided an estimate that it would cost approximately \$40,000 per building. Provide wet/dry flood proofing assistance to homeowners with repeated basement flooding due to storms.	Island Association/ assistance from public and private funding
	Encourage homeowners to fill in basements to a point higher than historic groundwater levels to eliminate repetitive basement flooding problems. (i.e. Bishop's Lane/ Lake Hills—approx 50 homes) This may be accomplished through an assessment consideration	Islip Public Works/ Engineering Assistance from private and public funding
	Encourage homeowners to eliminate basements in homes with repetitive basement flooding due to rise in groundwater (i.e. Bishop's Lane/ Lake Hills—approx 50 homes). This may be accomplished through an assessment consideration.	Islip Public Works/ Engineering and Islip Town Board
	Evaluate potential of damage to cultural facilities in FIRM and SLOSH areas i.e. Brookwood Hall and Islip Art Museum	Islip Department of Parks, Recreation and Cultural Affairs

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Mitigation Strategy	Action	Responsibility
Public Education and Awareness	Increase public awareness of storm hazards and how to reduce injury and property damage. Provide outreach for vulnerable populations, such as residents of trailer parks and households where English is a second language.	Islip Emergency Management
Natural Resource Protection	Insure that streams and river are free of debris that impedes flow, especially where they flow under roads.	Islip Public Works
Emergency Services	Update and test components of the coastal evacuation plan. Insure that critical roadways will not be subject to inundation.	Islip Emergency Management and FILES (Fire Island Law Enforcement/ Security Council)

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Mitigation Strategy	Action	Responsibility
Structural projects	Roadway drainage improvement for flood mitigation, projects on line for 2006- 2009: • 64 Sherman Ave, West Islip/ \$20,800 estimate/ Scheduled for this season • 633 Alwick Avenue, West Islip/ \$20,800 estimate/ Scheduled for this season • Koral Avenue/ 3rd Ave., Bay Shore/ \$33,600 estimate/ Scheduled for this season • 92 Hanson Place, Ronkonkoma/ \$22,400 estimate/ Scheduled for this Season • 315/319 Oakwood Avenue, West Islip/\$26,000/ P.O. #71295 • 1 Charles Ave, Islip Terrace/ \$9,800/ P.O. 71295 • 278 Laverne Avenue, Holbrook/ \$35,560/ W/O #079 • Chestnut Ave. and Wilson Blvd., C Islip/\$43,900/ W/O #081 • 400 Cedar Avenue, Islip/\$13,800/ Scheduled for this season • 1609 9th Avenue, Bohemia/ \$33,600/Scheduled for this Season • Grant Avenue, Islip/\$40,000 estimate/Scheduled for this season	Islip DPW, Islip Engineering Division and Islip Planning Commission
	Inspect all Bulkheads owned by Islip Town and replace if necessary.	Islip Engineering Division and Recreation, Park and Cultural Affairs Dept.

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WIND

Mitigation Strategy	Action	Responsibility
Prevention	Code enforcement. Insure the building code is enforced for all construction projects, pre and post disaster, especially with regard to wind speed. According to the New York State department of State, wind speed design for Islip Town is between 110 and 120 miles per hour.	Islip Code Enforcement
	Perform a structural review of windloading for Town Buildings and structures.	Islip Public Works/ Engineering Division
	Recommend to other governmental, NGO (Non-governmental Organization) and commercial entities that a structural review of windloading be conducted on buildings in Islip Town. This would be especially important for multistory buildings such as the hospitals, federal court and office buildings.	Town Supervisor's Office.
Property Protection	Insure that dead trees and branches near electric service for critical care facilities are removed or pruned back to reduce the possibility for interruption of service.	Critical care facilities, LIPA and Islip Department of Public Works
	Insure that dead trees and branches near electric service for Islip Town facilities and infrastructure are removed or pruned back to reduce the possibility for interruption of service.	Islip Public Works/ Building Division/ Engineering Division and LIPA
Public Education and Awareness	Increase public awareness of storm hazards and how to reduce injury and property damage. Provide outreach for vulnerable populations, such as residents of trailer parks and households where English is a second language.	Islip Emergency Management
Emergency Services	Work with trailer parks to insure evacuation of residents when high winds are expected	Islip Emergency Management

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ICE STORMS

Mitigation Strategy	Action	Responsibility
Prevention	Insure that branches are pruned away from electric and telephone wires and dead standing trees are removed where they may fall on wires.	Islip Public Works and LIPA
Property Protection	Insure that salt and sand are stockpiled for icing events.	Islip Public Works
Public Education and Awareness	Increase public awareness of hazards from ice storms through the Islip Town Website and publications.	Islip Emergency Management
Natural Resource Protection	Insure that injurious amounts of salt and sand do not wash into environmentally sensitive areas.	Islip Public Works
	Purchase sand dome for salt/sand storage at Long island MacArthur Airport \$145,000	Long Island MacArthur Airport
Emergency Services	Insure that roadways are cleared and salted in an efficient manner	Islip Public Works
Structural projects	Encourage placing utilities underground in future subdivisions to reduce damage from ice storms.	Islip Planning Commission

FIRE

Mitigation Strategy	Action	Responsibility
Prevention	Continue to enforce codes and regulations regarding construction and building occupancy.	Islip Department of Code Enforcement
Property Protection	Insure that all Town buildings are in compliance with fire code and that fire protection is in place and operational.	Islip Planning Department, Building Division
Public Education and Awareness	Increase public awareness of fire prevention and safety. Continue outreach to vulnerable population including the elderly, disabled, economically disadvantaged and households where English may be a second language.	Islip Public Safety, Volunteer Fire Departments, and ambulance corps.
	Fund private organizations to further enhance outreach to vulnerable populations.	Islip Town Board

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Structural projects	Encourage use of additional fire	Islip Building Division/
	resistant construction measures for new	Islip Division of
	construction and retrofit.	Engineering

TERRORISM

Mitigation Strategy	Action	Responsibility
Prevention		
Property Protection	Purchase Emergency Generator for the Long Island McArthur Airport Terminal Building. \$1,000,000	Long Island MacArthur Airport
	Purchase sprinkler system for Long Island McArthur Airport Terminal Building. 1,300,000	Long Island MacArthur Airport
	Purchase in-line baggage handling system equipped with explosive device detection system. 3,000,000	Long Island MacArthur Airport
	Install surveillance cameras and security gates on DPW heavy equipment and fueling facilities.	Islip Public Works
Public Education and Awareness	Increase public awareness of Terrorism Hazard. "If you see something, say something".	Islip Emergency Management
Emergency Services	Purchase Emergency Equipment to Enhance Response capability:	Long Island MacArthur Airport
	Oshkosh ARFF Vehicle-1500 series for aircraft firefighting	
	Upgrade communications equipment for emergency response at Long Island MacArthur Airport \$100,000	
	Purchase Self Contained Breathing Apparatus for Fire Rescue 15 units at \$5,000 each= \$75,000	
Structural projects	Install Blast Fence and RON (remain overnight) fence slats \$500,000	Long Island MacArthur Airport

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Moderately Low Ranking Hazards

WILDFIRE

Mitigation Strategy	Action	Responsibility
Prevention	Train a cadre of Park and Nature center employees in wildland fire prevention and basic fire fighting.	Islip Emergency Management/ NYSDEC Forest Rangers
Property Protection	Provide basic equipment for nature center and parks (Indian Pumps/ fire broom/ flapper for small spot fires.	Islip Emergency Management
Public Education and Awareness	Provide information to the public on wildfire prevention.	Parks, Recreation and Cultural Affairs Department

TEMPERATURE EXTREMES

Mitigation Strategy	Action	Responsibility
Prevention	NA	NA
Property Protection	Insure that all Islip Town facilities have back up power generation or have a system in place to prevent pipes from freezing during a power outage.	Islip Emergency Management, Islip Public Works and Planning Department; Engineering Division
Public Education and Awareness	Provide information to the public on the danger of heat and cold emergencies and where shelters will be located.	Islip Emergency Management and Department of Human Services
Emergency Services	Open emergency shelters when necessary (heat or cold emergencies)	Islip Emergency Management
Structural projects	Install backup power generators for shelters that would be used for heat and cold weather emergencies.	Islip Public Works/ Planning Department; Engineering Division

EARTHQUAKE

Mitigation Strategy	Action	Responsibility
Property Protection	Review Current Town Building Code	Islip Planning
	with regard to HAZUS model of 1884	Department;
	Earthquake.	Engineering Division
Public Education and	Provide information on earthquake	Islip Emergency
Awareness	safety to the public.	management
Emergency Services	Insure that there is a provision for	Islip Emergency
	earthquake hazards in the Islip Town	Management
	Emergency Operation Plan.	
Structural projects	Insure that all future construction	Islip Public Works/

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Mitigation Strategy	Action	Responsibility
	projects for Islip Town are in compliance with earthquake hazard requirements.	Planning Department; Engineering Division

INFESTATION

Mitigation Strategy	Action	Responsibility
Public Education and	Continue to work with the USDA to	Islip Emergency
Awareness	educate the public.	Management
Natural Resource Protection	Insure that wood or wood products from USDA Quarantine area are not removed and used for projects in other areas.	All Town Departments

DROUGHT

Mitigation Strategy	Action	Responsibility
Prevention	Employ water conservation measures	All Town departments
	for all Islip Town buildings and grounds.	
Property Protection	Encourage the use of drought resistant	Islip Department of
	plants for Islip Town Plantings.	Parks, recreation and
		Cultural Affairs

EPIDEMIC

Mitigation Strategy	Action	Responsibility
Prevention	Continue to hold the annual rabies vaccination clinic for pets.	Islip Animal Shelter, Suffolk County Department of Health
		services and Suffolk County Society for the Prevention of cruelty to Animals (SCSPCA)
Public Education and Awareness	Continue to utilize Islip Town website and printed materials to educate the public about West Nile Virus, Lyme Disease and rabies.	Islip Emergency Management, Animal Shelter and Parks, recreation and Cultural Affairs Department
Emergency Services	Work with Suffolk County Health Department on PODs. (Point of Distribution)	Islip Emergency Management

OIL SPILL/ HAZMAT

Mitigation Strategy	Action	Responsibility
Public Education and	Continue program for placing "Drains to	Islip Public Works and

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Awareness	Bay" medallions on storm drains.	Planning
	Use Islip Town website and print material to encourage recycling of waste oil and other recyclables. Continue "STOP" program (Stop throwing out pollutants).	Islip Department of Environmental Control
Emergency Services	Upgrade decontamination supplies and equipment.	Islip Town Department of Aviation and transportation, Hazardous Materials Team

UTILITY FAILURE

Mitigation Strategy	Action	Responsibility
Prevention	Reduce the number of trees that are in	Islip DPW and LIPA
	conflict with overhead utilities.	
Property Protection	Insure that surge protection is in place	Islip Planning
	for all electric and electronic equipment	Department, Building
	in Town facilities and buildings.	Division
Public Education and	Use Islip Town website and print	Islip Emergency
Awareness	materials to educate the public on	Management
	safety during utility failure.	

TRANSPORTATION ACCIDENT

Mitigation Strategy	Action	Responsibility
Prevention	Insure that all Islip Town employees are	Islip Emergency
	aware of the dangers at rail road grade	Management
	crossings.	
Public Education and	Continue to educate the public about	Islip Emergency
Awareness	the dangers at grade crossings.	Management
Emergency Services	Optical Preemption Signal- Town wide	Islip DPW
	Construction late 2007, \$450K grant	

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Mitigation Strategy	Action	Responsibility
Structural Projects	Traffic Safety projects (10): Intersection improvements Waverly Ave. @ Blue Point Road, in construction ~\$40K	Islip DPW
	Harrison Ave. @ 2 nd Ave, Bayshore, in construction ~\$32K	
	Turn Lane (Rt Turn) Lakeland Ave @ 11 th St., in final design ~\$60K	
	Community Islands and Dividers Bohemia (traffic calming) ~\$280K grant 90%	
	Roadway Reconstruction Furrows Rd, Holtsville ROW taking in process, NYS final approval req., ~\$1.2M grant 80/20	
	Broadway Ave, Holbrook, In design ~\$1.6M grant 80/20	
	Traffic Signal Improvements Grant Ave @ Moffit Blvd, RFP submitted	
	Town wide: Brentwood@ Connecticut, Calebs @ Vanderbuilt, Church @ Knickerbocker, Wshington @ Flick, Construction Spring 2007, ~\$280K	
	Traffic Calming West Islip Blvd @ Paprocki Ave, West Islip, RFP submitted	

STRUCTURAL COLLAPSE

Mitigation Strategy	Action	Responsibility
Prevention	Continue to collect data regarding past events and analyze potential future	Islip Emergency Management
	events.	

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Mitigation Strategy	Action	Responsibility
Property Protection	Inspect all Islip Town buildings and	Islip Planning
	facilities to insure their structural	Department,
	soundness.	Engineering Division
Public Education and	Use the Town website and print	Islip Emergency
Awareness	material to educate the public to the	Management and
	danger of construction that does not	Planning Department,
	comply with code and the necessity to	Code Enforcement
	obtain building permits and certificates	
	of occupancy.	
Structural projects	Insure that All construction in Islip Town	Islip Planning
	is to code.	Department, Code
		Enforcement

CIVIL UNREST

Mitigation Strategy	Action	Responsibility
Prevention	Continue to provide an opportunity for	Islip Town Board and
	the public to voice their opinions	Supervisor's office/ All
	through open, public meetings and	Islip Town
	timely response to citizen inquiries.	Departments
Property Protection	NA	NA
Public Education and	Provide educational and recreational	Islip Department of
Awareness	opportunities for at-risk youth to counter	Parks, Recreation and
	the beliefs, rituals and habits of gang	Cultural Affairs/
	culture.	Department of Human
		Services, Youth
		Bureau

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V. Plan Maintenance

A. Monitoring, Evaluating and Updating the Plan

The Disaster Mitigation Act of 2000 (DMA 2000) is the latest legislation to improve the hazard mitigation planning process. DMA 2000 (Public Law 106-390) was signed by the President on October 30, 2000. The new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. As such, DMA 2000 establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP).

Section 322 of DMA 2000 specifically addresses mitigation planning at the state and local levels. States, tribes, and communities must have an approved mitigation plan in place before receiving HMGP funds. Local and tribal mitigation plans must demonstrate that their proposed mitigation actions are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities.

DMA 2000 is intended to facilitate cooperation between state and local authorities. It encourages and rewards local, tribal, and state pre-disaster planning and promotes sustainability as a strategy for disaster resistance. This enhanced planning network will better enable local, tribal, and state governments to articulate their needs for mitigation, resulting in faster allocation of funding and more effective risk reduction projects.

To implement the new DMA 2000 requirements, FEMA prepared an Interim Final Rule, published in the Federal Register on February 26, 2002, at 44 CFR Parts 201 and 206, which establishes planning and funding criteria for states, tribes, and local communities.

With assistance the FEMA provides through New York State and Suffolk County, the Town of Islip Department of Planning and Development will have the primary responsibility for managing the Islip All Hazard Mitigation Plan and applying for Federal and Local grants to maintain the Plan.

It is expected that Islip Town agencies, Suffolk County, New York State, the Federal Government and non-governmental agencies (NGO's) will carry out their roles as outlined in the final plan. A realistic implementation date should be established for Mitigation measures.

To ensure continuity of mitigation planning and operations, the Town of Islip will establish a permanent Mitigation Planning Team consisting of Town Departments, other governmental agencies, NGO's and citizen groups to monitor plan implementation.

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The group will have a public meeting at least once a year to re-evaluate and provide suggestions for updating the plan.

Sidney B. Bowne & Son, LLP, the consultants for the Plan will be available to update the Plan in consultation with the Planning Team.

B. <u>Implementation of Mitigation Plan Through Existing Programs</u>

The plan will be most successful it is linked to existing programs, especially where it parallels the following regional master plans:

- 1. Town of Islip Emergency Management All Hazards Emergency Plan-2007 (draft).
- 2. L.I. MacArthur Airport On-Site Aircraft Incident Mutual Aid Response Plan (09/129/03).
- 3. Town of Islip Hazardous Materials Response Team Standard Operating Guidelines.
- 4. Department of Environmental Control Emergency Preparedness Site Summary- 2006
- 5. Town of Islip Debris Management Plan
- 6. Report: Critical Areas in Case of Power Failure (draft)
- 7. Suffolk County High Potential Loss Facilities and Transportation features (draft 2007)

C. Continued Public Involvement

Copies of the current Islip All Hazard Mitigation Plan will be made available to the public through the Town of Islip Department of Planning and Development at Town Hall.

Copies may also be distributed to Public Libraries or other places where it will be available for review and comment by the public.

The public will be invited through press release and legal notices to the annual Islip Planning Team meeting.

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VI. Plan Adoption

(Item to be completed after Final Plan is adopted by Islip Town Board)

44 CFR §201.4(c)(6)and §201.6(c)(5) of the Interim Final Rule require plans to be adopted before being submitted to FEMA for formal review and final approval. A copy of the resolution of adoption must be included with the plan.

Once your local governing body has approved the plan, it must be submitted to the State Hazard Mitigation Officer (SHMO) at the New York State Emergency Management Office (NY SEMO).

NY SEMO is responsible for forwarding the plan to the FEMA Regional Office for review.

Sample Resolution

Resolution #XXXXXXXXX

WHEREAS the Town of Islip has experienced severe damage from hurricanes, flooding, fires and other natural, human caused and technological hazards, on many occasions in the past century, resulting in property loss, loss of life, economic hardship, and threats to public health and safety;

WHEREAS a *Hazard Mitigation Plan* (the Plan) has been developed after more than one year of research and work by the Town of Islip Mitigation Planning Team and the people of Islip Town;

WHEREAS the Plan recommends many hazard mitigation actions that will protect the people and property affected by the natural hazards that face the Town of Islip;

WHEREAS a public meeting was held to review the Plan as required by law;

NOW THEREFORE BE IT RESOLVED by the Supervisor and Town Council of the Town of Islip that:

- 1. The Hazard Mitigation Plan is hereby adopted as an official plan of Islip.
- 2. The respective town officials identified in the strategy of the Plan are hereby directed to implement the recommended actions assigned to them. These officials will report annually on their activities, accomplishments, and progress to the Town of Islip Mitigation Planning Team.
- 3. The Town of Islip Mitigation Planning Team will provide annual progress reports on the status of implementation of the plan to the Supervisor and Town

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Council. This report shall be submitted to the Town Council by **DATE** of each year.

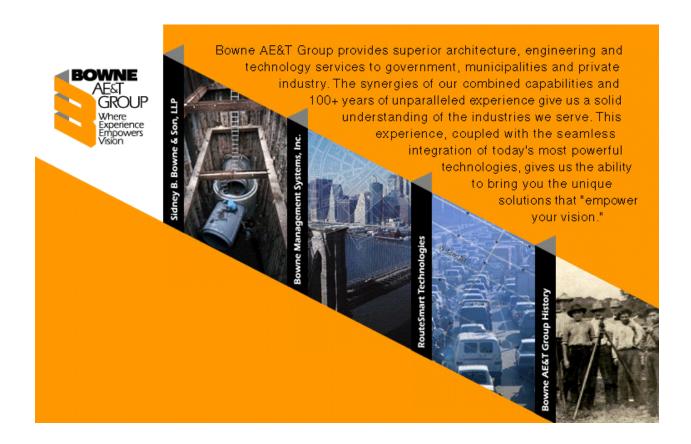
PASSED by the Town Council of Islip, this <u>Day</u>, <u>Month</u>, <u>Year</u> APPROVED by me this <u>Day</u>, <u>Month</u>, <u>Year</u>

Signature

Supervisor, Town of Islip

ATTESTED and FILED in my office this $\underline{\text{Day}}$ of $\underline{\text{Month}}$ $\underline{\text{Year}}$. Signature

Clerk



Islip All Hazard Mitigation Plan Comments should be directed to:
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